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ABSTRACT

This document is a report on the educational resources of the Hartford (Connecticut) Public Schools and the disparities between the Hartford Public Schools and other school districts. The report uses a reanalysis of existing publicly available data, including published reports of the Connecticut State Department of Education and other state and federal agencies and organizations as well as documents provided by the Hartford and other school districts. The first of four major sections focuses on the social and economic conditions in the City of Hartford. The discussion establishes the context within which the school-age population of Hartford is growing up and the context within which the Hartford Public Schools function. It also describes the student human resources available to the schools. Section 2 details the resources of the schools in terms of a set of standard input and output categories used to examine schools and school districts. It describes the formal institutional resources brought to bear on the challenge of educating the youth of Hartford. Section 3 presents comparisons between the human and institutional resources of Hartford and other Connecticut public school districts. Finally, Section 4 examines conditions in the Hartford schools in light of educational standards established by the State of Connecticut. Contains 14 tables, 102 figures, and 192 references. (JB)

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A Descriptive Study of the Educational Resources of the Hartford Public Schools and Disparities With Other Districts

Gary Natriello

Teachers College
Columbia University

February 1993

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Introduction

This report on the educational resources of the Hartford public schools and the disparities between the Hartford public schools and other school districts is organized in four major sections. Section I focuses on the social and economic conditions in the City of Hartford. The discussion establishes the context within which the school-age population of Hartford is growing-up and the context within which the Hartford Public Schools must function. It describes the student human resources available to the Hartford Public Schools. Section II details the resources of the Hartford Public Schools in terms of a set of standard input and output categories used to examine schools and school districts. It describes the formal institutional resources brought to bear on the challenge of educating the youth of Hartford. Section III presents comparisons between the human and institutional resources of Hartford and other Connecticut public school districts. Finally, Section IV examines conditions in the Hartford Public Schools in light of educational standards established by the State of Connecticut.

The method used throughout this report is the reanalysis of existing publically available data. Such data include published reports of the Connecticut State Department of Education, and other state and federal agencies and organizations. They also include documents provided by the Hartford Public Schools and other public school districts in the Hartford area. The breadth of data examined in the current inquiry provides a measure of confidence in the patterns of findings and the general conclusions.

Section I
The Hartford Population: Resources for Schooling

The most pervasive human resource in any school system is the population of students served by that system. Students are the vast majority of persons in any school. In some fundamental sense, their strengths are the strengths of the school system and their weaknesses are the weaknesses of the school system. Although schools facilitate learning, it is impossible to escape the fact that in any school, learning is sometimes an individual task, sometimes a task accomplished by a group of peers in interaction, and sometimes a task dominated by a member of the teaching profession. In the first two instances the quality of the student population has an obvious direct influence on the degree to which learning can take place. In the third instance, the quality of the student population has direct effects on the nature of the instruction that can be accomplished and strong indirect effects on student learning.

To examine the condition of the student population served by the Hartford public schools, it is necessary to consider nine major areas: health status, economic status, family status, housing, minority status, crime, social services in the community, academic performance and social and emotional development. In each of these areas the analysis will proceed in three stages. First, there will be a general review of the condition of the Hartford population in terms of relevant indices. Second, there will be a discussion of the implications of these indices for the population of students and parents. Third, there will be a calculation of the incidence of the problems in the area in a typical Hartford public school classroom of 23 students.[1]

A. Health Status

There has long been a concern with the health and well-being of mothers and children in the U.S. (Lesser, 1985). There is striking evidence for the link between the health of expectant mothers and infants and long-term physical and intellectual well-being. For example, Rantakallio (1979, 1983) reports that the children of mothers who smoked during pregnancy were shorter, more prone to respiratory diseases, and had poorer mean ability in school than children whose mothers did not smoke during pregnancy. Other behaviors of pregnant women found to have long-term negative effects on the intellectual and physical development of their children include alcohol abuse and drug abuse (Newman & Buka, 1990). Other studies have looked beyond the prenatal period. Lubchenco, Delivoria-Papadoupoulos, and Seales (1972) and Littman and Parmelee (1978) report on the inverse relationship of problems in the prenatal and infancy periods, respectively, to measures of later healthy child development. Edwards and Grossman (1979) and Wolfe (1985) have reported on the positive relationship between health and cognitive development in children. Children who begin life with problems such as low birthweight may have low IQs throughout their lives. Moreover, health problems in childhood are likely to interfere with school attendance and, ultimately, with school performance (Weitzman, Klerman, Lamb, Menary, & Alpert, 1982; Wolfe, 1985).

A particular difficulty in the area of maternal and infant health is the large number of births to teenage mothers in the U.S. As the Children's Defense Fund (Hughes, et al., 1986, 39) reports, "in 1983 babies born to teenagers represented 13.7 percent of all births, but 20 percent of all low birth weight babies. Thus, the risk of pregnancy outcome is related inversely to age." The limited evidence available suggests that male children born to teenage parents are at a developmental disadvantage

in preschool and elementary school, compared to children born to older mothers (Baldwin & Cain, 1981; Broman, 1981; Brooks-Gunn & Furstenberg, 1985; Furstengerg & Brooks-Gunn, 1985; Maracek, 1979). These developmental deficits increase over time, so that by adolescence, children of teen mothers are more than twice as likely as children of older mothers to have repeated a grade and twice as likely to misbehave in school (Furstenberg & Brooks-Gunn, 1985).

In the city of Hartford in 1990 there were 747 births to teenage mothers, representing 23% of total births (Hartford Health Department, 1992). This figure represents a very slight increase from the 22.5% figure for Hartford reported by the Connecticut State Department of Health Services for 1985-87. In that same period teen pregnancies were 8.9% of all births, indicating that the rate of teen pregnancies in Hartford was over two and one-half times the overall state average rate.

In the city of Hartford in 1990 13% of all births to Hartford residents were low birthweight babies. (Hartford Health Department, 1992) This represents a slight increase from the figure of 11.9% reported by the State Department of Health Services for 1985-87 (State of Connecticut, Department of Health Services, 1989). In the 1985-87 period, the comparable statewide figure was 6.6, indicating that the percentage of low birthweight babies born in Hartford was approaching double the state average. According to a recent Hartford hospital study, 13% of mothers tested positive for drugs at the time of giving birth (Hartford Health Department, 1992).

B. Economic Status

Economic status and educational achievement are significantly linked. Children living in families with incomes below the poverty line are nearly twice as likely to be retained in a grade as children in nonpoverty-stricken families (Bianchi, 1984). Children from poor families are also more likely to drop out of high school. Stedman, Salganik, and Celebuski (1988) found that, in 1980, among U.S. high school sophomores participating in the High School and Beyond Study (Sebring, et al., 1987), 24% of those in the lowest fifth of the income distribution had dropped out of high school by 1982, while only 11% of students in the other four-fifths of the distribution had dropped out. The lowest income students were twice as likely to have dropped out of school. The income level of one's community is also related to educational performance. Data from the 1986 NAEP reading proficiency tests show that the average 13-year old in a disadvantaged urban community scored only about a quarter of a standard deviation higher than the average 9-year old in an advantaged urban community. Moreover, 17-year-olds in a disadvantaged urban setting scored at about the same level as a typical 13-year-old residing in an advantaged urban area (Applebee, et al., 1988; Natriello, McDill & Pallas, 1990).

In 1987 approximately 20% of all children in the U.S. under 18 years of age lived in families below the poverty level. This represents 12.4 million children in poverty. Minority children were much more likely to be living in poverty than white children. While the poverty rate for white children was approximately 12%, for African American youngsters the rate was nearly 46%, and for Latino children the rate was 40%. (U.S. Department of Commerce, Bureau of the Census, 1988b).

The poverty status of adults and children in the City of Hartford is in stark contrast to the larger state environment. Although Connecticut has the highest per capital income in the United States, Hartford is the fourth poorest of U.S. cities and has the second highest rate of poverty among children (Office of Urban Affairs, 1990)

According to the 1990 Census, 27.5% of all persons were below the poverty level. The situation becomes more severe in families in which children are present, particularly young children. Among families with related children under 18 years, 36.3% were below the poverty level; among those with related children under 5 years, 42.4% were below the poverty level. The most severe conditions are associated with female-headed households. Among female-headed households with related children under 18 years, 54.7% were below the poverty level; among female-headed households with related children under 18 years, 64.6% were below the poverty level (U.S. Department of Commerce, Bureau of the Census, 1990b).

These community data probably underestimate the impact of poverty among school age children since they do not take into account the number of children in families and since the average number of children in poor families is likely to be greater than the number in families above the poverty level. This is supported by the figures for the percentage of students in the Hartford Public Schools receiving free or reduced price meals. The percentage of students in the Hartford Public Schools receiving free or reduced price meals reported on the 1991-92 Strategic School District Profile for Hartford is 63.3%. This is considerably higher than the statewide average of 19.8% (Connecticut State Department of Education, 1992k).

C. Family Composition

Family structure is related to educational outcomes (Milne, Myers, Rosenthal, & Ginsberg, 1986; Shinn, 1978). Children living in single-parent families have been found to score lower on standardized tests and receive lower grades in school, and to be more likely to drop out of high school.

Family status or composition is an important indicator of the level of familial support a child is likely to receive. Despite the fact that there are many examples of single parent households that provide substantial social, emotional, and economic support to children, the national data are quite clear in indicating that children in single parent families are likely to fare less well in school than their peers in two-parent families (Natriello, McDill, and Pallas, 1990).

For example, an analysis of the 1986 NAEP reading scores revealed that third-grade children living in homes lacking either their mother or father scored considerably lower than other third graders living in homes with both parents present. Children who reported that their father did not live in their home scored more than half a standard deviation lower than children with a father present. When these shortfalls are expressed in grade equivalents, it appears that third-grade children in homes lacking at least one parent were at least a year behind in reading proficiency when compared to other third graders living with both parents (Natriello, McDill, and Pallas, 1990).

Similar effects are found for mathematics proficiency. Again 1986 NAEP data reveal that approximately 50% of third graders reporting that their father did not live in their home scored above level 200, beginning skills and understanding. Roughly 71% of those third graders who reported that their father was present surpassed that level. The lack of a mother in the home is an even more important disadvantaging characteristic. While 69% of the third graders with a mother present scored above level 200 in mathematics proficiency, only about 43% of those without a mother living in their home attained level 200.

Children in single-parent families also are almost twice as likely to drop out of high school than children from two-parent families. Stedman, et al. (1988), using the High School and Beyond data describing 1980 high school sophomores, found that 22.4% of children from single-parent families dropped out of school, compared to 12.0% of those children from two-parent families.

Nationally, about 13.5 million children (about 21%) lived in households with just a mother present in 1988. About 1.8 million or slightly less than 3% lived in households with just a father present, and about the same number lived in households with neither parent present.

Data from the 1990 U.S. Census reveals that there were 6,714 two parent families with children in Hartford, 1,253 single-parent families with children headed by a male, and 10,907 single-parent families with children headed by a female (U.S. Department of Commerce, Bureau of the Census, 1991). Thus 64% of the households with children in the City of Hartford are single-parent households.

D. Educational Attainment

The importance of the educational attainment of parents, particularly of mothers, becomes apparent when education is viewed as a process that occurs not only in schools, but also in families and communities (Cremin, 1976). Mothers who are

more highly educated themselves have more knowledge of their children's schooling, have more social contact with school personnel, and are better managers of their children's academic careers (Baker & Stevenson, 1986; Stevenson & Baker, 1987). Children of highly educated mothers do better in school, and stay in school longer, than children whose parents have not completed high school. (Natriello, Pallas, & McDill, 1990).

About one in every five children under the age of 18 in 1987 lived with mothers who had not completed high school, representing a total of 12.7 million children. These children were disproportionately African American and Latino. Among African American youth living in families where the mother was present, nearly 30% had mothers who had not finished high school. And among Latino children living in families with mothers present, over 50% had mothers who were not high school graduates. The educational attainments of white mothers are much higher. Approximately 87% of the white children living in families with the mother present had mothers who had at least completed high school (U.S. Bureau of the Census, 1988b).

Data on the educational attainment of the parents of children in the Hartford Public Schools are not readily available. However, data on the educational attainment of adults in the city of Hartford are available. Among adults 25 years and older, over 40% have not completed high school, and 18% have not completed the ninth grade (U.S. Department of Commerce, Bureau of the Census, 1992). These data demonstrate that large proportions of the adult population of Hartford lack the level of educational attainment that would allow them to be of most help to their children. Moreover, these data for the adult population 25 and older almost surely overstate the educational attainment of parents in Hartford for two reasons. First, with just under one-fourth of the births in Hartford being to teenage mothers, many parents of children in the Hartford Public Schools are not yet 25 years old. Educational attainment rises during the late teen years and early 20's so the educational attainment of those under 25 is lower than the educational attainment of those over 25. Second, since teenage pregnancy is one of the factors that leads students to leave school early, it is likely that even among the 25 and over population, parents of children in the Hartford schools who had their children while in their teen years would have lower average levels of educational attainment. Thus, the figure of 40% with less than a high school education is probably a conservative estimate of the proportion of parents who have not completed high school.

E. Housing/Mobility

Adequate and stable housing is an important part of the foundation that children can use as a basis for successful participation in school. As far back as the Equality of Educational Opportunity study (Coleman, Campbell, Hobson, McPartland, Mood, Weinfield, & York, 1966) of the mid sixties, researchers have examined the impact of factors such as having a dedicated place to study within a stable living environment. Clearly, unstable and inaequate living arrangements present barriers to educational success.

The 1990 Census revealed that of the total of 56,098 housing units within the city of Hartford, 799 (1.4%) lacked complete plumbing, 9.2% of the units housed more than one person per room, and 19,948 (35.6%) required occupants to devote 30% or more of household income to housing costs (U.S. Department of Commerce, Bureau of the Census, 1992b). Each of these characteristics may be viewed as an indicator of inadequate housing (State of Connecticut, Department of Housing, 1992).

More severe than inadequate housing is the complete lack of housing. A special study of the 1990 Census attempted to count individuals who were in emergency shelters or on the streets during the evening of March 20-21, 1990 (Connecticut State Data Center, 1991). This study found that 701 individuals were in emergency shelters and 26 individuals were visible in street locations in the City of Hartford during that time period. The Hartford Public Schools (1987) estimate that at least 25-30 students are homeless in temporary shelters at any one time.

The level of residential mobility is reflected in the data reported in the 1991-92 Strategic School District Profile for the Hartford Public Schools (Connecticut State Department of Education, 1992), which indicates that the percentage of returning elementary students (k-6) is 72.0%. Thus 28% of the elementary students did not return. This is greater than the statewide average of 17.8% of elementary students not returning.

F. Minority Status

Racial and/or ethnic minority group membership is perhaps the best known factor associated with being educationally disadvantaged. Historically, members of minority groups typically have failed to succeed in schools at the same levels as the majority of the white group. There is a vast amount of evidence documenting the lower performance of African American and Latino children in school relative to white children. Recent results from the National Assessment of Educational Progress (NAEP), for instance, have shown that the reading, writing, and mathematics skills of African American and Latino children are substantially below those of white children at ages 9, 13, and 17 (Applebee, Langer & Mullis, 1988; Beaton, 1986; Dossey, Mullis, Lindquist & Chambers, 1988; NAEP, 1985).

Several reasons have been identified to explain the generally poorer academic performance of African American and Latino youngsters. The social and economic conditions in which African American and Latino families live in the United States may explain much of the poor academic performance. A second explanation involves the failure of the schools to offer a program that is sensitive to the cultural background of minority youngsters. A third explanation involves historical patterns of social discrimination in the larger society which lead to patterns of institutional discrimination within institutions such as schools.

In 1988 the U.S. population under age 18 numbered approximately 63.6 million people. Of that total, approximately 70.4% or 44.8 million children, were white. About 15.1% or 9.6 million children, were African Americans, and 10.8% or 6.8 million children, were Latino. An additional 3.8%, or 2.4 million children, were identified as some other racial group, usually Asian or Pacific Islander. Thus, in 1988 approximately 16.4 million children, or 26% of the population under age 18, would be considered educationally disadvantaged, using racial/ethnic identity as a broad indicator (Natriello, McDill, & Pallas, 1990).

In Connecticut in October 1991 minority students numbered 122,855 of the total 478,380 children enrolled in public schools. Minorities constituted 25.7% of the total enrollment, just slightly below the national average (State of Connecticut, Board of Education, 1992). These minority students are distributed unevenly throughout the state; in the five largest cities in the state, 77.7% of all students were members of a minority group.

The Hartford public schools served the largest number (23,761) and the highest proportion (92.4%) of minority students of any system in the state. Included in this number is 10,705 African American students, 12,578 Latino students, 462 Asian students, and 16 American Indian students. In addition the Hartford district served 1,955 white students in October of 1991. The concentration of minority students in the Hartford schools has increased steadily over the past twenty years from 69.1% from in 1971 to 78.8% in 1976, to 86.6% in 1982, to 90.5% in 1987, to 92.1% in 1990, to 92.4% in 1991 (State of Connecticut, Board of Education, 1989, 1990, 1991, 1992). Thus, the minority representation among the student population of the Hartford public schools exceeds the representation of minorities in the general population of Hartford which, according to the 1990 Census was 70% or 97,125 of a total population of 139,739 (U.S. Department of Commerce, Bureau of the Census, 1990).

The proportions of minorities among the general population and the student population stand in sharp contrast to those same proportions in most of the contiguous and adjacent school districts as Table 1 reveals. Only one district, Bloomfield with 80.5% minority enrollment approaches the concentration of minority students found in Hartford.

Table 1
Proportions of Minorities in the Student Populations for Hartford and Contiguous and Adjacent Communities 1991*

Municipalities	Total Enrol	White	Amer. Indian	Asian American	African American	Hisp.	Min. Proj. Con.	Proportions of Minorities in the Student Populations**
Hartford	25716	1955	16	462	10705	12578		92.4%
<u>Contiguous</u>								
Avon	2082	1974	0	59	32	17		5.2%
Bloomfield	2461	481	1	32	1819	128		80.5%
East Granby	672	644	0	3	17	8		4.2%
East Hartford	6004	4016	7	271	1020	690		33.1%
Newington	3795	3532	8	86	88	81	75	6.9%/8.9%
Simsbury	3895	3737	0	93	37	28	76	4.1%/6.0%
South Windsor	3801	3485	44	136	87	49	39	8.3%/9.3%
West Hartford	7556	6321	5	429	351	450	175	16.3%/18.7%
Wethersfield	2982	2815	1	68	37	61		5.6%
Windsor	4341	2748	3	151	1241	198		36.7%
<u>Adjacent</u>								
Canton	1264	1221	0	16	15	12	10	3.4%/4.2%
East Windsor	1309	1179	2	33	59	36		9.9%
Ellington	1945	1895	0	10	32	8		2.6%
Farmington	2955	2769	0	92	61	33	113	6.3%/10.1%
Glastonbury	4658	4265	6	180	71	136	51	8.4%/9.5%
Granby	1515	1489	0	13	6	7	19	1.7%/3.0%
Manchester	7062	5937	21	179	637	288	92	15.9%/17.2%
Rocky Hill	2028	1851	2	65	75	35		8.7%
Suffield	1867	1789	3	27	35	13	7	4.2%/4.6%
Vernon	4238	3815	12	103	193	115		10.0%
Windsor Locks	1645	1529	6	53	41	16		7.1%

*Source: State of Connecticut, Board of Education, 1992.
**Figures After the Slash (/) Indicate the Proportions Including Project Concern Students

G. Limited English Proficiency

Students whose primary language is not English, or who have limited English proficiency, face serious obstacles to success in school. There is little agreement on how to define limited English proficiency or how to measure the size of the population with limited English proficiency. The Bilingual Education Act of 1984 defined an individual as "limited English proficient" (LEP) if that individual comes from a home environment where a language other than English is the one most relied upon for communication and if he or she has sufficient difficulty in understanding, speaking, reading, and writing English to deny the individual the opportunity to learn successfully in all-English classrooms (U.S. General Accounting Office, 1987).

Regardless of how limited English proficiency is assessed, by most criteria students defined as limited English proficient are at a substantial disadvantage in U.S. classrooms. Nor is this shortfall limited to verbal skills, as succeeding even in science and mathematics courses may require the ability to communicate well in English. In addition to performance differences in school, there is some evidence that children from minority-language backgrounds are more likely to drop out of high school than children from homes where English is spoken exclusively. Salganik and Celebuski (1987) report that, among sophomores in the High School and Beyond study, those from homes where only a non-English language was spoken were more than twice as likely to drop out of high school as students from homes where English was the sole or primary language spoken.

This indicator of educational disadvantage also highlights the importance of family and community factors, as well as school influences. Parents who do not speak English may be severely hampered in their ability to help their children with their schoolwork or in their ability to manage their children's school career. Estimates of the number of limited English proficient children nationwide range from one and one-half million to over two and one-half million, depending on the indicators used.

Data regarding one of the indicators of limited English proficiency, the language spoken in the home, is available from the 1990 Census. Among the 128,130 persons five years of age or older in Hartford in 1990, 50,523 or 39.4% lived in homes where a language other than English was spoken, and 25,366 or 19.8% of these reported that they did not speak English "very well" (U.S. Department of Commerce, Bureau of the Census, 1992).

The Connecticut State Department of Education reports that 45.6% of the students served by the Hartford public schools in the fall of 1988 came from homes in which a language other than English was spoken (State of Connecticut, Department of Education, 1990). During the 1988-89 school year 4,773 students or nearly 20% of the total student population were Spanish dominant individuals reported as eligible for state mandated bilingual education programs. This is in contrast with the other public school districts surrounding Hartford in which no students were eligible for such programs (Connecticut State Department of Education, Division of Education Support Services, undated).

The Strategic School District Profile for 1991-92 indicates that the percentage of Non-English Home Language students in the Hartford Public Schools is 51.3%.[2] This is considerably greater than the statewide average of 11.1%.

H. Crime

Crime is perhaps the most salient element of a set of community characteristics which present themselves as liabilities for our most disadvantaged youth. Such liabilities include a host of personal, familial, and community problems such as teenage pregnancy, alcohol and drug abuse, delinquent gang members, single-parent families, family violence, including child abuse, and family financial need. They also include what have been termed "socially disorganized communities" characterized by poor social control, which is linked to a variety of forms of social deviance such as delinquent gangs, high rates of personal and property crime, and widespread distribution and consumption of drugs (Empey, 1978; Gottfredson & Gottfredson, 1985).

During 1991 there were a total of 21,256 crimes committed in the City of Hartford. Of these 3597 were crimes against persons, including murder, rape, robbery, and aggravated assault, and 17,660 were crimes against property, including burglary, larceny, and auto theft (City of Hartford, Policy Department, 1991).

With a total 1990 population of 139,739, if it is assumed that there was no overlap in victims of the 21,256 crimes committed, then 15.21% of the Hartford population were victimized by a crime in 1991. Of course, again assuming no overlap, another 15.21% of the population was involved in perpetrating a crime in 1991 (City of Hartford, Police Department, 1991).[3]

The incidence of experiencing crime may also be considered from the perspective of the household. With 51,464 households in Hartford in the 1990 Census, assuming no overlap, 41.3% of the households in Hartford in 1991 were victimized by crime, with another 41.3% involved in perpetrating the crime.

To account for the fact that multiple offenses and multiple victimization is quite common, we can consider the rates of 15.21% for individual involvement with crime and 41.3% for household involvement with crime in estimating the impact on students and classrooms.

I. Labor Force Participation of Parents

Beyond the obvious economic benefits of labor force participation, there are social benefits to children who reside in families in which there is parental participation in the labor force. There are obvious potential effects from the modeling of work and work-related behaviors that parents can communicate to children. Besides the visibility of the disciplined behaviors required to hold a job in the modern economy, there is the impact of exposure to the process of exchanging work effort for symbolic and material rewards. Some appreciation of these rewards and the efforts necessary to generate them has been identified as a key component in motivating students to work on school tasks (Stinchcombe, 1964, Natriello & Dornbusch, 1984).

Data from the 1990 Census for the City of Hartford reveal that of the 35,301 children under the age of 18 living with one or both parents, only 14,093 of these children were in homes in which at least one of the parents participated in the labor force (U.S. Department of Commerce, Bureau of the Census, 1992). Thus, nearly 40% of the children under the age of 18 in the City of Hartford in 1990 were living in settings where they cannot observe a parent participate in the work force. These students were not exposed the models of the discipline necessary to participate in the

work force and were not exposed to the exchange of effort for symbolic and material rewards that characterizes the U.S. economy.

J. The Incidence of Problems in a Typical Hartford Public School Class

It is difficult to appreciate the impact of these various problems on the students of Hartford and the classrooms and schools in which they seek to be educated. Examining the incidence of these problems in a simulated classroom provides a more realistic appreciation of the manifestation of these problems. Table 2 depicts in concrete terms the incidence of the social problems detailed thus far in a typical Hartford public school class of 23 students.

Table 2
The Rate of Incidence of Indicators of Disadvantage Among the Hartford Population and the Average Number of Students Manifesting the Indicator in a Typical Classroom

Indicator	Rate Among Relevant Hartford Population	Number in Hartford Class of 23.4 Studts
A. Health		
Low Birthweight*	13%	3.0
Mother on Drugs at Birth*	13%	3.0
Born to Teen Mother*	23%	5.4
B. Economic Status		
Families With Children Under 18 Below Poverty Level++/Students Receiving Free/Reduced Price Meals***	36.3%/63.3%	8.5/14.8
C. Family Composition		
Single Parent Households+	64.7%	15.1
D. Parent Educational Attainment		
Less than High School Education++	40%	9.5
E. Housing		
30% or More of Household Income Devoted to Housing Costs++	35.6%	8.3
Percentage of Elementary Students not Returning***	28.0%	6.6
F. Minority Status		
Minority Group Member+++	92.1%	21.6
G. Limited English Proficiency		
Home in Which A Language Other Than English is Spoken++/Percentage of Non-English Home Language Students***	19.8%/51.3%	4.6/12.0
H. Crime		
Individual Experience with Crime#/Year	15.21%	3.6
Household Experience with Crime/Year#	41.3%	9.7
I. Parent Labor Force Participation		
Living With Parent(s) With No Labor Force Participation++	40.0%	9.4

*Source: Hartford Health Department, 1992.
**Source: U.S. Department of Commerce, Bureau of the Census, 1990b.
***Source: Connecticut State Department of Education, 1992. SSP
+Source: U.S. Department of Commerce, Bureau of the Census, 1991.
++Source: U.S. Department of Commerce, Bureau of the Census, 1992.
+++Source: State of Connecticut, Board of Education, 1992.
#City of Hartford, Police Department, 1991.

There are certain assumptions that must be kept in mind when considering these estimates. First, when there has been a choice of estimates, the more conservative one, i.e., the one that minimizes the scope of the problem, has been included in the table. The use of Census data on percentage of households in which a language other than English is spoken and in which the respondent did not speak English "very well" is one example of this conservative stance. The assumption that the perpetuators and victims overlap completely in the crime statistics is another example.

A second assumption that guided the construction of these estimates is that it is preferable to rely upon data on the community overall as well as data on students actually in the Hartford public schools. Although it might, at first, seem sufficient to have only data on the students directly served by the Hartford public schools, there are several reasons to include the community statistics.

First, measures for the entire community permit an examination of the broader milieu in which students in Hartford find themselves. This seems preferable even when the community measures understate the extent of a problem as they most likely do for the indicators of parental educational attainment and LEP status. Thus the community indicators provide a sense of the resources available to students in the community.

Second, the community measures are drawn from a wider variety of sources than measures related to the student population which would be drawn almost exclusively from records of the Hartford Public Schools. For example, Table 2 is based on data taken from the Hartford Health Department, the U.S. Census, the Hartford Police Department as well as the Connecticut State Department of Education. Using multiple sources and non-school sources means that these estimates are not based on data collected by a single agency that might have limited resources to collect such data and that might be subject to changing policies and service orientations that affect the data collected in substantial ways. For example, there is wide variation in the extent to which school districts identify student problems and classify students for special services; such variation is a result of differences in district philosophy and available resources for diagnosis and remediation. The resource constraints affecting data gathering activities to which service organizations are subject, have much less of an effect on the results obtained when an agency, such as the Census, is devoted to data gathering.

With these assumptions in mind, it is instructive to consider the composition of a typical Hartford class in terms of prevalence of the problems represented by these indicators. These problems are undoubtedly related to a substantial degree. Therefore, although we can estimate the incidence of each individual problem among a classroom of children, we cannot ascertain the particular combinations of these problems in the lives of these children. Taking the problems individually, there are likely to be 3 students who were born at low birthweight, three whose mothers were on drugs at the time of their births, three who were born to teen mothers, eight to fifteen from families below the poverty level, fifteen from single parent households, nine whose parents have less than a high school education, eight who live in inadequate housing units, six who have moved to a new school in the last year, twenty-one who are members of a minority group, three to twelve from homes in which a language other than English is spoken, four with an individual experience with crime in the past year, nine with some experience with crime in their household in the past year, and nine who live with parents who do not participate in the labor force. Such is the stunning constellation of social problems that will confront the members, both teachers and students, of a typical class in the Hartford public schools. They provide some indication of the student human resources to which the schools have access.

K. The Concentration of Social Problems and the Implications for Parents, Students, and Schools

Figures such as those reviewed above for the social conditions in the City of Hartford inevitably raise the question of whether the concentration of such problems leads to additional difficulties for individuals and social institutions beyond the additive consequences of the individual problems. Put another way, with such high concentrations of problems, is the total greater than the sum of the parts? More important for the present discussion is the question of whether the total problem picture for the public schools is greater than the sum of the parts. At least two theories of such "concentration effects" must be considered.

First, the effects of the concentration of social problems may operate through a process of social or educational isolation. With regard to communities, Wilson (1987) has argued that the concentration of joblessness in inner-city neighborhoods such as those in Hartford creates a social isolation, a sequestering of inner-city families from role models who can show that steady employment is an achievable goal and that there is a link between schooling and adult life chances. In the absense of sustained contact with the middle- and working-class families that used to inhabit such inner-city neighborhoods, the means for motivating young people to strive for success in school and work are diminished. The kind of neighborhood isolation that Wilson discussed for residents of inner-city communities in general may take a more specifically educational form for students in the public schools. Such students confront a type of hidden resource deprivation because their fellow students lack the family support, experience, and educationally supportive opportunities found in other school-age populations in the U.S. Countless studies have portrayed the potency of peer effects in school situations.

A second process may operate to magnify the effects of the concentration of social problems in the Hartford Public Schools. Schools, like other social institutions, have evolved basic bureaucratic structures designed to meet certain work flow demands. The bureaucratic organization of schools is designed to process students in batches. This organization of schools assumes that most of the students served by a school have fairly uniform middle-class characteristics, which include developed academic skills, predictable learning needs, and habits of prosocial behavior. Moreover, the typical organizational form of schools assumes that schools need only be concerned with the immediate lives of students and with only a narrow band of school-related activities.

These assumptions probably work fairly well for middle-class students living in communities and families able to provide for their developmental and career-related needs and able to monitor their out-of-school activities. They may have applied to most Americans in an earlier era when society was dominated by local leaders and institutions that shared fairly homogeneous values. These assumptions also served reasonably well when the U.S. economy provided large numbers of positions for those who were unable to succeed in traditional schools.

But these assumptions do not apply in the case of the students served by the Hartford Public Schools. Hartford students present the Hartford Public Schools with histories of deficiencies across a range of physical and social domains. Moreover, Hartford students would appear to enjoy few of the out-of-school social and economic resources that sustain middle-class students. The resources necessary to respond appropriately to such student populations are certainly greater than those necessary to respond to more advantaged students. These resource demands extend from basic areas of health and nutrition, to the supervision of free time, to the development of appropriate social behavior, and to the more complex and sophisticated instructional strategies required to respond to students with learning problems.

Section II
The Hartford Public Schools: Resources for Education

This section focuses on the resources brought to the educational enterprise by the Hartford Public Schools. There are two aspects to this analysis. First, the resources that go into the education process are considered. These include fiscal resources as well as some understanding of how those fiscal resources are translated into programmatic resources. Second, the resources that develop from the educational process in Hartford are reviewed. These include measures of student performance both during and following participation in the school program.

A. Resources for the Educational Enterprise in Hartford

This review of the resources that go into the educational process in the Hartford Public Schools is organized in terms of the expenditure categories used by the Connecticut State Department of Education and reported in their annual reports on Connecticut Public School Expenditures (State of Connecticut Department of Education, 1990d, 1991d, 1992d). For each category or set of categories in the sections that follow, there is a discussion of district spending as reported by the Connecticut State Department of Education and a discussion of the impact of that spending in terms of educational programs and services in the Hartford Public Schools as revealed in documents provided by the Hartford Public Schools. All expenditure data reported here is derived by averaging the district expenditures as reported in the state reports for the three years: 88-89, 89-90, 90-91. These three year averages provide a set of more stable indicators of district resources than figures for individual years.

Key questions for the analysis of the resources of the Hartford Public Schools concern both the levels of resources in each of the standard reporting categories, but also the actual educational inputs purchased with those resources.

1. Staffing

Three expenditure categories noted in the annual reports of the State Department of Education (1990d, 1991d, 1992d) pertain directly to staffing. These categories reflect the costs of certified staff, non-certified staff, and employee benefits. For the three year period from 1988-89 through 1991-91, the average per pupil costs of certified staff in the Hartford Public Schools was $4231.67, over $400 dollars above the state average of $3822. The average per pupil costs of non-certified staff was $1050.67, nearly $300 above the state average of $754.33. The average per pupil costs of employee benefits was $966.67, over $250 above the state average of $713.67.

The above average levels of resources devoted to staff in the Hartford Public Schools may be attributed to one of three things. First, the per pupil staff expenditures may reflect a higher quality staff in the Hartford Public Schools. Second these above average expenditures may reflect a greater quantity of staff per pupil in the Hartford Public Schools. Finally, the higher costs of staff in the Hartford district may reflect the higher costs of attracting and holding teachers in urban centers. This last possible cause of greater than average levels of resources devoted to staffing has been discussed by Chambers and Parrish (1986) for districts in Connecticut. Although the first two reasons for higher staff cost figures suggest that students would be getting real additional resources through either more teachers or better teachers, the last reason suggests that a school district is incurring greater costs without real benefit to students. Thus, in considering the programmatic impact of the patterns of staffing

expenditures, it becomes important to understand why the costs for instructional staff in the Hartford Public Schools exceed the state average.

Quality of Staff. One possible explanation for the higher average per pupil staff costs of the Hartford Public Schools is that the Hartford Public Schools employ staff of higher quality than the state average. Quality may be considered along two dimensions. First, the composition of the positions in Hartford may include a greater proportion of individuals with specialized skills. Second, the individuals filling staff positions in Hartford may have personal characteristics (e.g., experience, training) that are associated with higher quality performance.

Table 3 presents data related to the first dimension of staff quality, the mix of positions in the Hartford staff. Table 3 presents data on the composition of certified staff members statewide and those in the Hartford district. These data are drawn from the School Staff Report on certified staff in school districts as of September 1989 prepared by the State of Connecticut, Department of Education (undated). In terms of the composition of the certified staff, Table 3 shows that the Hartford Public Schools have 1.26% fewer general elementary teachers than the state average, 4.02% fewer content specialist teachers than the state average, 4.99% more special education teachers than the state average, and .88% fewer vocational education teachers than the state average. The Hartford Public Schools had 1.23% more support staff such as guidance councelors and school psychologists than the state average, .14 more school level administrators than the state average, and .11% fewer central office administrators than the state average.

Table 3 - Certified Staff Composition - State Average and Hartford District - September 1989

	St Avg*			Hartford		
	N	% of T staff	% of All staff	N	% of T staff	% of All staff
Gen Elem FTE	12041.2	35.6%	30.82	630.6	34.6%	29.56%
Content Spec FTE	14948.2	44.2%	38.26%	730.6	40.1%	34.24%
Spec Ed FTE	4575.1	13.5%	11.71%	356.3	19.6%	16.70%
Voc Ed FTE	2223.7	6.6%	5.69%	102.7	5.6	4.81%
Total FTE	33788.6			1820.2		
Support FTE	2736.5		7.00%	173.4		8.23%
School Lev Adm	1683.2		4.31%	95.0		4.45%
CentOff Adm	866.6		2.22%	45.0		2.11%
Total Cert Staff	39,074.90			2133.60		

*Source: State of Connecticut, Department of Education (undated). *School Staff Report: Certified Professional Staff in the 166 Local and Regional School Districts of Connecticut as of September 1989.*
**Average for 110 k-12 districts

These data on the composition of the Hartford staff suggest that at least some small portion of the above average staff costs of the Hartford public schools may be attributed to the nature of the positions in the district. Specifically, Hartford is spending more on staff salaries overall, in part, because of a higher proportion of special education teachers and support staff. These expenditures should result in greater staff resources for students. Such staff should enable the district to respond more effectively to students needs than if the staffing pattern was similar to the state overall. Although Hartford has a greater percentage of support staff than the state overall, the proportion of administrators in the Hartford Public Schools is nearly equal to the proportion reported statewide.

Table 4 presents data on the second dimension of staff quality, the characteristics of individual teachers. Panel A of Table 4 presents data on selected characteristics of teachers and support staff (State of Connecticut, Department of Education, undated). These figures reveal that the Hartford Public Schools employ 30% fewer teachers with an MA or more education than schools statewide, that Hartford teachers are very slightly older (.4 year), and have 1 and 1/2 fewer years of experience than teachers statewide. The Hartford Public schools employed over twice as great a percentage of first year teachers (4.9% vs. 2.4%) as schools statewide.

Panel B of Table 4 presents the characteristics of administrators statewide and those in the Hartford Public Schools. The Hartford Public Schools employ 74.2% fewer administrators with six or more years of training than schools statewide. Hartford administrators are 1.4 years older and had .7 years more experience than administrators statewide.

Panel C of Table 4 presents more recent data on teacher characteristics drawn from the 1991-92 Strategic School District Profile for the Hartford Public Schools (Connecticut State Department of Education, 1992). These more recent data indicate that during 1991-92 only 46.5% of teachers in the Hartford Public Schools had at least a masters degree compared to 78.8% of teachers statewide. In addition, the Strategic School District Profile also contains data on the percentage of teachers who have received special training as mentors, assessors or cooperating teachers. During 1991-92 only 11.5% of teachers in the Hartford Public Schools has such training compared to 18.6% of teachers statewide.

The budgetary impact of these differences in teacher characteristics is that the Hartford Public Schools are, on average, paying substantially more for a teaching force that, although slightly older, is markedly less likely to have advanced training and less experienced than teachers statewide. Moreover, the Hartford Public Schools are paying substantially more for administrators who, although slightly older and more experienced, are very substantially less likely to have advanced training. It is difficult to argue that, overall, the higher than average staff expenditures result in a higher quality staff to meet the needs of students.

Table 4 - Certified Staff Characteristics - State Average and Hartford District

A. Teacher Characteristics From School Staff Report - September 1989*

	State Avg.**	Hartford
Pct. MA+	76.2%	46.2%
Mean Age	43.7	44.1
Mean Exp	14.5	13.0
Pct 1st Yr	2.4%	4.9%

B. Administrator Characteristics from School Staff Report - September 1989*

	State Avg.**	Hartford
Pct 6yr+	79.2%	5.0%
Mean Age	48.7	50.1
Mean Exp	20.8	21.5

C. Teacher Characteristics From Strategic School District Profile - 1991-92***

	State Avg.	Hartford
Pct MA+	78.8%	46.5%
Pct Trained as Mentors, Assessors or Cooperating Teachers	18.6%	11.5%

*Source: State of Connecticut, Department of Education. (undated). *School Staff Report: Certified Professional Staff in the 166 Local and Regional School Districts of Connecticut as of September 1989*. Hartford, CN: Connecticut State Department of Education.

**Average for 110 k-12 districts

***Source: Connecticut State Department of Education. (1992). *Strategic School District Profile, 1991-92. Hartford School District*. Hartford, CT.

Quantity of Staff. A second reason for staff expenditures that exceed the state average in the Hartford Public Schools may be the quantity of staff assembled to serve the students. Table 5 presents data on the quantity of staff per pupil statewide and in the Hartford Public Schools

As indicated in Panel A of Table 5, the 1991-92 Strategic School District Profile for the Hartford District (Connecticut State Department of Education, 1992) shows that the Hartford Public Schools had a higher ratio of students to classroom teachers (18.8 to 1) than the state overall (18.0 to 1). The ratio of students to instructional specialists for Hartford (432 to 1) was also greater than the ratio for the state overall (419 to 1). Hartford did have a better ratio for the number of students per counselor, social worker and psychologist (210 to 1) than the state overall (224 to 1). Hartford also had a higher ratio of students per certified FTE Administrator (196 to 1) than the state overall (189 to 1). Hartford also had an advantage in the number of students per certified FTE staff; the Hartford ratio is 11.6 to 1, the ratio for the state overall (12 to 1).

Panel B of Table 5 presents data collected by the National Center for Education Statistics as part of the Common Core of Data Collection (U.S. Department of Education, 1992a). The data collected by NCES for Hartford for 1989 suggest a student/teacher ratio of 14.8, indicating that Hartford trails the state average by 1.5. The corresponding figures for 1990 show Hartford with a ratio of 14.2 students per teacher trailing the state average of 13.6 students per teacher.

In view of these data on the quantity of staff per student, it is nevertheless difficult to argue that students in Hartford experience a greater quantity of teaching staff than the state average. Thus, the greater personnel costs per student observed for the Hartford schools do not seem to be associated with differences in the quantity of staff available to students in those schools.

Table 5 - Quantity of Staff Per Student - State Average and Hartford District

	State Avg.	Hartford
A. From Strategic School District Profiles*		
Number of Students per Classroom Teacher	18.0	18.8
Number of Students per Instructional Specialist (reading consultant, other subject area consultant and library/media teacher	419	432
Number of Students per Counselor, Social Worker and School Psychologist	224	210
Number of Students per Certified FTE Administrator	189	196
Number of Students per Certified FTE Staff	12.0	11.6
B. From NCES Common Core**		
1989		
Total Students	461,560	24,682
Total Teachers	34,618	1,671
Stud/Teach Ratio	13.3	14.8
1990		
Total Students	469,123	25,418
Total Teachers	34,549	1,786
Stud/Teach Ratio	13.6	14.2

*Source: Connecticut State Department of Education, 1992. *Strategic School District Profile, 1991-92. Hartford School District*. Hartford, CT.

**Source: U.S. Department of Education, National Center for Education Statistics (1992a). Statistics from the Common Core of Data Collection. Furnished by Mr. Thomas Smith, National Center for Education Statistics, Washington, DC.

The failure of the Hartford Public Schools to provide a greater quantity of teaching staff per student is confirmed by an analysis of elementary class size in Connecticut public schools conducted by the Connecticut Public Expenditures Council (1990) and by data presented in the Strategic School District Profile for the Hartford Public Schools (State of Connecticut, Department of Education 1992). Panel A of Table 6 presents data from the report of the Connecticut Public Expenditures Council for the Hartford Public Schools and for the state overall. Although this data is presented only up to the 1988-89 school year, the year prior to the 1989-90 school year used for the pupil/teacher ratio comparisons, it shows quite clearly that elementary students in Hartford are more likely to be in larger classes than students statewide. Hartford had more than twice the percentage of classes over 25 (14%) as Connecticut overall (6%), and Hartford had a substantially greater percentage of classes over 20 (63%) as Connecticut overall (48%).

Panel B of Table 6 presents data for the 1991-92 school year drawn from the Strategic School District Profile for the Hartford Public Schools. Data are presented for grades 2, 5, 7, and for English, math, social studies, and science classes at the high school level. At the second grade level the average class size in the Hartford Public Schools is 20.2 compared to 20.7 for second grade classes statewide. At the fifth grade level the average class size is 23.4 compared to 22.0 for fifth grades statewide. At the seventh grade level the average class size is 17.2 compared to 20.8 for seventh grades statewide. At the high school level the average size of classes in English, math, social studies, and science is 21.2 compared to 19.9 for these classes statewide. Thus at two grades levels Hartford class sizes are below the statewide average and at the other two grade levels Hartford class sizes exceed the statewide average.

This data on class size, together with data previously presented in the ratio or students to staff supports the conclusion that the greater expenditures for staff in the Hartford Public Schools do not result in a greater number of instructional resources experienced by students.

Table 6 - Class Sizes in Hartford and Connecticut Statewide

A. Distribution of Elementary Classes by Size Categories - 1988-1989 (N%)*

	State Total	Hartford
Under 16 Pupils	967/8%	69/10%
16-20 Pupils	5043/44%	175/27%
21-25 Pupils	4883/42%	321/49
Over 25 Pupils	644/6%	94/14

B. Average Class Size in Selected Grades - 1991-92**

	Statewide	Hartford
Grade 2	20.7	20.2
Grade 5	22.0	23.4
Grade 7	20.8	17.2
High School (English, Math, social studies, science)	19.9	21.2

*Source: Connecticut Public Expenditures Council. (1990). *Elementary Classes by Size in Connecticut Public Schools.*

**Source: Connecticut State Department of Education, 1992. *Strategic School District Profile, 1991-92. Hartford School District.* Hartford, CT.

Costs of Staff. The final possible reason for the higher than average staff costs for the Hartford Public Schools is that the costs of hiring staff are higher than average. Table 7 presents data on staff costs for Connecticut overall and the Hartford district (State of Connecticut, Department of Education, undated). The average teacher salary in Hartford was $44,525 in 1989-90, $3164 more than the statewide average of $41,361. The average administrator salary was $66,713, $5268 more than the statewide average of $61,445. Thus, the costs of staffing the Hartford Public Schools exceed the state average even though the staff does not appear to be of higher quality or of greater quantity than the average for the state.

Table 7 - Cost of Staff - State Average and Hartford District*

	State Avg.	Hartford
Mean Teacher Salary	$41,361	$44,525
Mean Administrator Salary	$61,445	$66,713

*Source: State of Connecticut, Department of Education (undated). *School Staff Report: Certified Professional Staff in the 166 Local and Regional School Districts of Connecticut as of September 1989.* Hartford, CN: Connecticut State Department of Education.

The analysis of the certified staff of the Hartford Public Schools made possible by the annual staffing report of the Connecticut State Department of Education provides a useful context for considering the per pupil costs of certified staff in the Hartford Public Schools. Although the Hartford Public Schools have certified staff costs that are over $400 per pupil higher than the state average, it appears that they are not getting a higher quality staff on average than schools statewide. Indeed, the Hartford Public Schools appear to be staffed by teachers with less experience and markedly less advanced training than schools statewide. They also appear to be staffed by administrators who are very substantially less likely to have advanced training than school districts statewide. So in terms of quality as measured by standard indicators of professional training, the certified staff of the Hartford Public Schools falls short of the state average.

2. Pupil and Instructional Services

This expenditure category includes "expenditures for personnel services that are purchases and not part of the district payroll, such as teaching assistants, curriculum

consultants, in-service training specialists, medical doctors, therapists, audiologists, neurologists, psychologists, psychiatrists, etc. (Lines 28, 202, and 220)" (State of Connecticut Department of Education, 1992d, p. 5).

For the three year period from 1988-89 through 1990-91, the average annual per pupil expenditure for pupil and instructional services in the Hartford Public Schools was $38.67. The comparable figure for schools statewide was $99.67. Thus, students in the Hartford Public Schools had access to $61.00 less of the programmatic resources related to pupil and instructional services than students statewide. Put another way, Hartford students had access to 38.8% of the resources in this category available to the average student statewide.

However, some of this apparent disadvantage when compared to the state average may be due to the provision of services by personnel who are on the district payroll. Of course, this would also account, in part, for the higher than average staff expenditures.

3. Textbooks and Instructional Supplies[4]

This expenditure category includes "expenditures for textbooks, workbooks, textbook binding and repairs, and supplies purchased for instructional use. Amounts paid for instructional materials of an expendable nature are reported in this category (Lines 34, 34, 207, 208, 225 and 226)" (State of Connecticut Department of Education, 1992d, p. 5).

For the three year period from 1988-89 through 1990-91, the average annual per pupil expenditure for textbooks and instructional supplies in the Hartford Public Schools was $77.67. The comparable figure for schools statewide was $147.68. Students in the Hartford Public Schools thus had access to $70.01 less of the programmatic resources related to textbooks and instructional supplies. Hartford students had access to 52.6% of the resources in this category available to the average student statewide.

These instructional resources are, of course, related to the instructional program of the district. Table 8 presents data related to the instructional program of the Hartford Public Schools drawn from the 1991-92 Strategic School District Profile. Panel A of Table 8 presents the scheduled hours of instruction per year for the Hartford Public Schools and statewide. At the elementary level the Hartford schools offer three years more instruction per year than the statewide average (970 hours for Hartford vs. 967 statewide). This advantage for Hartford represents .3% of the statewide average number of hours of scheduled instruction. At the middle school level the Hartford schools offer 44 fewer hours of instruction per year than the statewide average (925 for Hartford vs. 969 statewide). This disadvantage for Hartford represents 4.5% of the statewide average number of hours of scheduled instruction. At the high school level the Hartford schools offer 65 fewer hours of instruction per year than the statewide average (905 for Hartford vs. 970 statewide. This disadvantage for Hartford represents 6.7% of the statewide average number of hours of scheduled instruction.

Panel B of Table 8 presents the percentages of 1991 graduates of the Hartford Public Schools and 1991 graduates of Connecticut public schools statewide earning credits in selected courses. A greater percentage of Hartford graduates earned credits in Algebra I or the equivalent (81.3%) than graduates statewide (79.6%). In English literature a lower percentage of Hartford graduates earned credits (85.9%) than graduates statewide (96.6%). In laboratory science a lower percentage of Hartford graduates earned credits (58.9%) than graduates statewide (90.2%). In foreign language, a lower percentage of Hartford graduates earned credits for three or more years of study (42.0%) than graduates statewide (44.3%). In the arts a lower percentage of Hartford graduates earned credits for two or more years of study

(32.0%) than graduates statewide (35.0%). In vocational/technical courses, a lower percentage of Hartford graduates earned credits for two or more years (49.7%) than graduates statewide (52.3%). In terms of courses for college credit, a lower percentage of Hartford graduates earned credits (2.4%) than students statewide (15.1%). Thus, a lower percentage of Hartford 1991 graduates earned credits in each area except Algebra I. In courses in English literature and courses for college credit, over 10% fewer Hartford graduates earned credits than graduates statewide. In courses in laboratory science, over 30% fewer Hartford graduates earned credits than graduates statewide. These comparisons of patterns of earned credits between Hartford and the statewide average provide a conservative estimate of the real differences since the dropout rate in Hartford is higher than it is statewide, leaving fewer students in the graduating class than is typical statewide. With credit accumulation lower among dropouts than graduates, the use of the graduating class as a measurement point, overstates the true credit accumulation picture in Hartford.

Table 8 - Dimensions of the Instructional Program - Comparisons Between Hartford and Statewide Averages*

A. Scheduled Hours of Instruction Per Year

	State Avg.	Hartford
Elementary	967	970
Middle	969	925
High	970	905

B. Percentage of 1991 Graduates Earning Credits in Selected Courses

	State Avg.	Hartford
Algebra I or Equiv.	79.6%	81.3%
English Literature.	96.6%	85.9%
Laboratory Science	90.2%	58.9%
Foreign Language (3 or more years)	44.3%	42.0%
The Arts (2 or more years)	35.0%	32.0%
Vocational/ Technical (2 or more years)	52.3%	49.7%
Courses for College Credit	15.1%	2.4%

*Source: Connecticut State Department of Education, 1992. *Strategic School District Profile, 1991-92. Hartford School District.* Hartford, CT.

4. Library Books and Periodicals

This expenditure category includes "expenditures for library books, reference books, periodicals and newspapers purchased for general use by the school library (Lines 36, 209 and 227)" (State of Connecticut Department of Education, 1992d, p. 5).

For the three year period from 1988-89 through 1991-91, the average annual per pupil expenditure for library books and periodicals in the Hartford Public Schools was $4.67 compared to the statewide average of $15.00. Hartford students had access to $10.33 less of the programmatic resources related to library books and periodicals than students statewide. Thus, Hartford students had access to 31.1% of the resources in this category available to the average student statewide.

Such a pattern of limited expenditures over a sustained period of time leads to deficiencies in the collections of library materials. A report on the library collections of the Hartford Public Schools was prepared by a district committee in 1989 (Centeral Committee for the Status of the Library Media Program, 1989). Using standards for school media programs published by the American Library Association, the committee found that the number of books per pupil in the collections of the Hartford Public Schools was 10.96, substantially below the recommended minimum standard of 17.32 books. Only 3 of Hartford's 31 schools had library collections which met the minimum recommended standard. Moreover, the age of the library collections in the Hartford schools was viewed as a problem. Only two schools had collections in which a majority of the books were less than 10 years old. Six additional schools had collections in which a majority of the books were 10 years old or older; in all other schools at least half of the books were over 15 years old.

In addition, the Committee report noted that only one school in Hartford met the minimum standard for periodicals per student, only one school met the mimimum standard for microfiche and microform materials, only one school met the minimum standard for computer programs, only seven schools met the minimum standard for video tape programs, and only 10 schools met the minimum standard for non-print materials such as films, filmstrips, and audio tapes.

Using rating standards for collection quality developed by Loertscher and Ho (1986), the Committee examined the quality of the library collections in two general areas (Asian/African, Animals) and three specific areas (dinosaurs, space travel, North American Indians). In all cases the majority of schools in Hartford did not meet the collection requirements for even the lowest rating of "fair."

This analysis is consistent with one performed by the Connecticut State Department of Education, Bureau of Grants Services (1992) which indicated wide disparities between the number of library books acquired per pupil and per school building during the five year period from 1986-87 through 1990-91. That analysis indicated that over the five-year period Hartford acquired an average of 4 library books per pupil or 17,430 library books per school building. During the same time period, the combined suburbs, excluding Hartford acquired an average of 16 books per pupil or 38,974 library books per school building.

5. Equipment

This expenditure category includes "expenditures for the acquisition of, or the lease/purchase of, equipment regardless of grants received under school construction. It does not include expenditures from bond funds. 'Equipment' means an item which has an expected

useful life of greater than one year; retains its original shape and appearance with use; is nonexpendable; and does not lose its identity through transformation or incorporation into a different or more complex item (Lines 38, 39, 211, 212, 229 and 230) (State of Connecticut Department of Education, 1992d, p. 6).

For the three year period from 1988-89 through 1990-91, the average annual per pupil expenditure for equipment in the Hartford Public Schools was $25.00 compared to the statewide average of $90.67. Hartford students had access to $65.67 less of the programmatic resources for equipment than students statewide. Thus, Hartford students had access to 27.6% of the resources in this category available to the average student statewide.

The impact of this pattern of spending is apparent in the data on the ratio of students to academic computers reported in the 1991-92 strategic school profiles (Connecticut State Department of Education, 1992, 1992, 1992, 1992) shown in Table 9.

Table 9 - Students Per Academic Computer in Various Types of Schools in Hartford and Statewide - 1991-92*

Type of School	Statewide	Hartford
K-6 Elementary*	17.7	45.8
K-8 Elementary**	15.1	36.4
Middle School***	12.1	32.3
High School****	9.1	14.8

*Source: Connecticut State Department of Education. 1992. *Strategic School Profile - 1991-92 - Dwight School, Hartford School District.* Hartford, CT.

**Source: Connecticut State Department of Education. 1992. *Strategic School Profile - 1991-92 - Dr. Michael D. Fox Elem School - Hartford School District.* Hartford, CT.

***Source: Connecticut State Department of Education. 1992. *Strategic School Profile - 1991-92 - Quirk Middle School, Hartford School District.* Hartford, CT.

****Source: Connecticut State Department of Education. 1992. *Strategic School Profile - 1991-92 - Hartford Public High School, Hartford School District.* Hartford, CT.

6. Tuition

This expenditure category includes "tuition paid to other educational agencies or nonpublic schools for services rendered to member students residing within school district boundaries, including expenditures for state-agency-placed children for whom the district is programmatically and fiscally responsible (Lines 31, 32, 205 and 223) (State of Connecticut Department of Education, 1992d, p. 6).

For the three year period from 1988-89 through 1990-91, the average annual expenditure per pupil in the Hartford district receiving such tuition fee services was $16,596.33, compared to the statewide average of $18,929.33. Thus, Hartford spent an average of $2,333.00 less per pupil receiving such services than districts statewide. The Hartford tuition rate per student served was 87.7% of the statewide average.

These kinds of tuition charges are typically set by the external service providers and are outside the control of local districts. The aggregate expenditures incurred by a district are the result of the mix of students and their needs and of the capacity of the local district to provide appropriate services in-district. Per pupil costs reflect the fees of service providers, the severity of student needs, and the demands of parents for the provision of such services.

7. Plant Operation

This expenditure category includes "expenditures for activities concerned with keeping the physical plant open, comfortable and safe for use, and keeping the grounds, buildings and equipment in effective working condition for plant operations and maintenance of buildings, grounds and equipment. It includes utilities and expenditures made by other town agencies for the school district. It does not include maintenance supplies or heating expenses. (Lines 29, 203 and 221)" (State of Connecticut Department of Education, 1992d, p. 6).

For the three year period from 1988-89 through 1990-91, the average annual per pupil expenditure for plant operation in the Hartford Public Schools was $161.67, compared to the statewide average of $266.00. Hartford spent $104.33 per pupil less than districts statewide. Thus, Hartford students experienced 60.8% of the plant expenditures of students statewide.

The 1991-92 Strategic School District Profile for the Hartford Public Schools (Connecticut State Department of Education, 1992) provides two additional breakdowns of expenses related to facilities. For 1990-91 the per pupil expenditures for plant operation and maintenance for Hartford Public Schools were $649, or $79 per pupil less than the statewide average of $728 per pupil. For that same school year the per pupil expenditures for land, buildings, and debt service totaled $210, or $141 per pupil less than the statewide average of $351 per pupil.

Beyond plant operating costs, a facilities study (von Dohlen, et al, 1992) conducted of the Hartford Public Schools revealed a number of problems that must be addressed to provide minimal levels of facilities to support the educational program. That report notes that Hartford elementary schools are operating at 133% of preferred capacity, middle schools are operating at 106% of preferred capacity, and high schools are operating at 107% of preferred capacity. A survey conducted by H.C.P.C. (Chung, 1990) revealed that the Hartford public schools were employing 123 portable classrooms and that twelve schools had enrollments beyond their functional school capacity, excluding protable classrooms. Hartford has both old and new facilities with nearly half of the school buildings first occupied prior to 1940. While extolling the virtures of older construction, the facilities study noted that many of the older buildings

lack the facilities required for a modern educational program. Cramped library space, nonexistent computer space, makeshift cafeteria space, and basement lavatories were mentioned as deficiencies of many Hartford schools.

8. Transportation

This expenditure category includes "regular transportation, other travel, transportation supplies, transportation liability insurance and vehicles. It does not include nonreimbursable transportation, assessments to member towns of secondary regional districts, and excess Vocational Agriculture (Vo-Ag) transportation costs beyond the nearest Vo-Ag Center...For 1988-89 through 1990-91, Line 46, Columns 2 and 3, were used for expenditures, and Line 56, Column 1, was used as the divisor)" (State of Connecticut Department of Education, 1992d, p. 6).

For the three year period from 1988-89 through 1990-91, the average annual per pupil expenditure for transportation in the Hartford Public Schools was $809.00, compared to the statewide average of $397.67. Hartford spent $413.33 more per pupil on transportation than districts statewide or 203.4% of the statewide average.

These above average transportation costs, while contributing to the overall impression that expenditures in Hartford match or exceed those in other comparable districts, would appear to contribute little or nothing to the actual educational program.

9. Purchased Services

This expenditure category includes "all insurance costs (other than employee fringe benefits), travel and transportation (other than to and from school), expenditures for nonmembership pupils, communications and other purchased services (Lines 33, 206 and 224) (State of Connecticut Department of Education, 1992d, p. 6).

For the three year period from 1988-89 through 1990-91, the average annual per pupil expenditure for purchased services in the Hartford Public Schools was $142.33 compared to the statewide average of $117.00. Hartford spent $25.33 per pupil more than the statewide average or 121.7% of the statewide average expenditure.

It is difficult to argue that higher than average expenditures such as those represented by purchased services represent a meaningful programmatic advantage for students in the Hartford Public School. Such above average spending typically reflects the additional cost of doing business in an urban center, a point illustrated well by insurance costs which are higher in crime-ridden urban neighborhoods than in suburban neighborhoods.

10) The Impact of Resource Distribution over a Student's Career

Although the average annual per pupil expenditures in the budget categories described above provide some sense of the programmatic resources available to students in the Hartford Public Schools, a more complete sense of those resources is gained by considering the resources available to students over their entire schooling career. Table 10 presents the cumulative effect of these resources through the thirteen years of a student's k-12 schooling career. For each catgory the average per pupil expenditures over the three year period are multiplied by the thirteen years of a student's career.

Hartford students would appear to benefit from substantial advantages in terms of the funds expended for certified staff, non-certified staff, benefits, transportation, and purchased services. However, as previously noted, the ostensible benefits in the personnel categories are in reality the cost of attracting and holding staff in urban schools; the higher levels of expenditures are not reflected in more favorable staff quantity or quality indicators. Likewise, the seeming advantages of Hartford for the transportation and purchased services categories probably reflect higher costs for services which do not translate into educational advantages for students.

Hartford students would appear to be disadvantaged by the lower than average expenditures in pupil and instructional services, textbooks and instructional supplies, library books and periodicals, equipment, tuition, and plant operation. However, once again, the programmatic implication of these expenditure patterns are not straightforward. The lower than average tuition expenditures are likely to be the result of a particular configuration of student needs or of more modest parent demands for out-of-district services. In either case the lower average tuition per out-of-district placement does not reflect less adequate programmatic resources for students served in-district.

This leaves four expenditure categories which probably reflect real programmatic disadvantages for Hartford students over their schooling career: textbooks and instructional supplies, library books and periodicals, equipment, and plant operation. In each category the difference between the average statewide expenditures and the average Hartford expenditures is substantial.

Table 10 - Average Expenditures Per Pupil Over the Thirteen Year School Career* for Hartford and Statewide**

	Hartford	Statewide***	Discrepancy
Cert. Staff	$55,011.71	$49,686.00	$5,325.71
Non-Cert. Staff	$13,658.71	$9,845.29	$3,813.42
Benefits	$12,566.71	$9,277.71	$3,289.00
Pupil & Instruct. Services	$502.71	$1,295.71	($793.00)
Textbooks & Instruct. Supplies	$1,009.71	$1,919.84	($910.13)
Lib. Books & Periodicals	$60.71	$195.00	($134.29)
Equipment	$325.00	$1,178.71	($853.71)
Tuition****	$21,5752.29	$24,6081.29	($30,329.00)
Plant Operation	$2,101.71	$3,458.00	($1,356.29)
Transportation	$10,517.00	$5,169.71	$5,347.29
Purchased Services	$1,850.29	$1,521.00	$329.29

*Figures arrived at by multiplying the average per pupil expenditures for the three year period (1988-89, 1989-90, 1990-91) by the thirteen years of the schooling career.

**Sources: State of Connecticut, Department of Education. (1990). *Connecticut Public School Expenditures - 1988-1989.* Hartford, CT. State of Connecticut, Department of Education. (1991). *Connecticut Public School Expenditures - 1989-1990.* Hartford, CT. State of Connecticut, Department of Education. (1992). *Connecticut Public School Expenditures - 1990-1991.* Hartford, CT.

***Statewide figures pertain to the 110 k-12 school districts.

****Per pupil tuition figures pertain to the number of pupils receiving tuition-based services.

11. Other Resources

In addition to fiscal resources, schools profit from other kinds of resources. One such resource that is seldom considered explicitly is support of parents and organized parents groups. Table 11 presents the percentages of families in the Hartford Public Schools and statewide who belong to the organized parents groups in the schools. In k-6 elementary schools in Hartford the percentage of families belonging to the organized parent group is 41.5% or 71.6% of the statewide average membership of 57.7%. In k-8 elementary schools in Hartford the percentage of families belonging to the organized parent group is 39.5% or 62.8% of the statewide average membership of 62.9%. At the middle school level in Hartford the percentage of families belonging to the organized parent group is 4.6% or 12.9% of the statewide average membership of 35.8%. At the high school level in Hartford the percentage of families belonging to the organized parent group is 13.8% or 68.0% of the statewide average membership of 20.3%. Thus, at each grade level Hartford Public Schools show a substantially lower percentage of families belonging to the organized parent group than the average school statewide.

Table 11 - Percentages of Families in Hartford and Statewide Belonging to Organized Parent Groups by Level of School*

Type of School	Hartford	Statewide	Hartford as Percent of Statewide Average
K-6	41.3%	57.7%	71.6%
K-8	39.5%	62.9%	62.8%
Middle	4.6%	35.8%	12.9%
High Sch	13.8%	20.3%	68.0%

*Sources: Connecticut State Department of Education. (1992). *Strategic School Profile - 1991-92 - Barbour School*. Hartford, CT. Connecticut State Department of Education. (1992). *Strategic School Profile - 1991-92 - Batchelder School*. Hartford, CT. Connecticut State Department of Education. (1992). *Strategic School Profile - 1991-92 - Fox School*. Hartford, CT. Connecticut State Department of Education. (1992). *Strategic School Profile - 1991-92 - Bulkeley High School*. Hartford, CT.

B. Student Performance

There are a number of kinds of indicators that may be used to understand the academic performance of students in the Hartford Public Schools. These include: 1) performance on the Connecticut Mastery Tests, 2) performance on the district-administered Metropolitan Achievement Test, 3) performance on the SABE, 4) SAT scores, 5) dropout and graduation rates, and 6) post-high school education rates. Each of these indicators provides some sense of the academic development and performance of the students served by the Hartford public schools.

1) Connecticut Mastery Tests

a) Mathematics

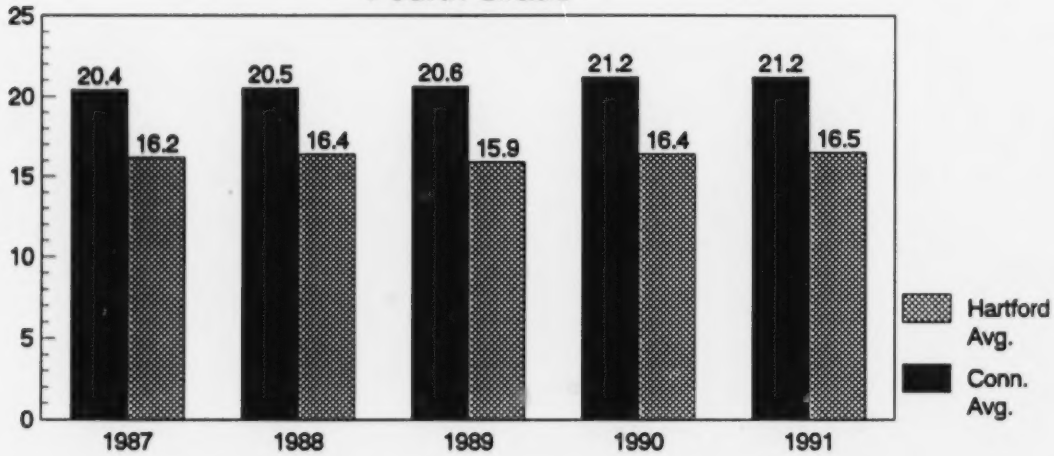
The performance of Hartford students on the Connecticut Mastery tests provides some indication of both the absolute and relative achievement of those students on the areas covered by the testing program: mathematics, language arts, reading, and writing. Figure 1 presents the average performance of students in Hartford and throughout the state of Connecticut in terms of the number of mathematics objectives mastered on the fourth grade tests for 1987, 1988, 1989, 1990, and 1991. These data are taken from the annual reports on the Connecticut Mastery Testing Program prepared by the Connecticut State Department of Education (State of Connecticut, Department of Education, 1988a; 1989a; 1990a; 1991a; 1992a).

The fourth grade mathematics test assesses twenty-five objectives in the domains of conceptual understanding, computational skills, problem solving/applications, and measurement/geometry. The test contains four items per objective or a total of 100 items.

Figure 1 indicates that students in fourth grade in Hartford mastered an average of 16.2 objectives in 1987, 16.4 objectives in 1988, 15.9 objectives in 1989, 16.4 objectives in 1990, and 16.5 objectives in 1991. Students throughout Connecticut mastered an average of 20.1 objectives in 1987, 20.5 objectives in 1988 and 1989, and 21.2 objectives in 1990 and 1991. Thus the gap between the performance of the average Hartford student and the average Connecticut student increased between 1987 and 1991, increasing from 3.9 objectives to 4.7 objectives.

Figure 1 – Average Number of Mathematics Objectives Mastered – 1987 – 1991

Connecticut Average and Hartford Average
Fourth Grade



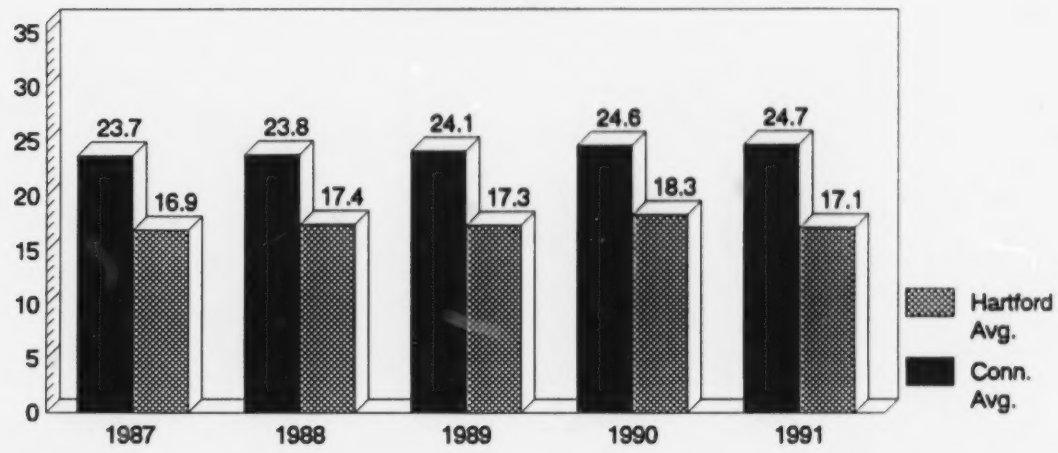
Source: State of Connecticut, Department of Education, 1988-92a.

Figure 2 presents the same kind of analysis for the sixth grade test. These data are taken from the annual reports on the Connecticut Mastery Testing Program prepared by the Connecticut State Department of Education (State of Connecticut, Department of Education, 1988b; 1989b; 1990b; 1991b; 1992b). The sixth grade mathematics test assesses thirty-six objectives in the domains of conceptual understanding, computational skills, problem solving/applications, and measurement/geometry. The test contains four items per objective or a total of 144 items.[5] Figure 2 indicates that students in sixth grade in Hartford mastered an average of 16.9 objectives in 1987, 17.4 objectives in 1988, 17.3 objectives in 1989, 18.3 objectives in 1990, and 17.1 objectives in 1991. Students throughout Connecticut mastered an average of 23.7 objectives in 1987, 23.8 objectives in 1988, 24.1 objectives in 1989, 24.6 objectives in 1990, and 24.7 objectives in 1991. Thus the gap between the performance of the average Hartford sixth grade student and the average Connnecticut sixth grade student was 6.8 objectives in 1987, 6.4 objectives in 1988, 6.8 objectives in 1989, 6.3 objectives in 1990 (when the two objectives on the test were replaced with two others "in response to concerns about the developmental appropriateness of requiring mastery of abstract fractional

computation early in grade six," State of Connecticut, Department of Education, 1991b:2), and 7.6 objectives in 1991.

Figure 2 – Average Number of Mathematics Objectives Mastered – 1987 – 1991

Connecticut Average and Hartford Average
Sixth Grade

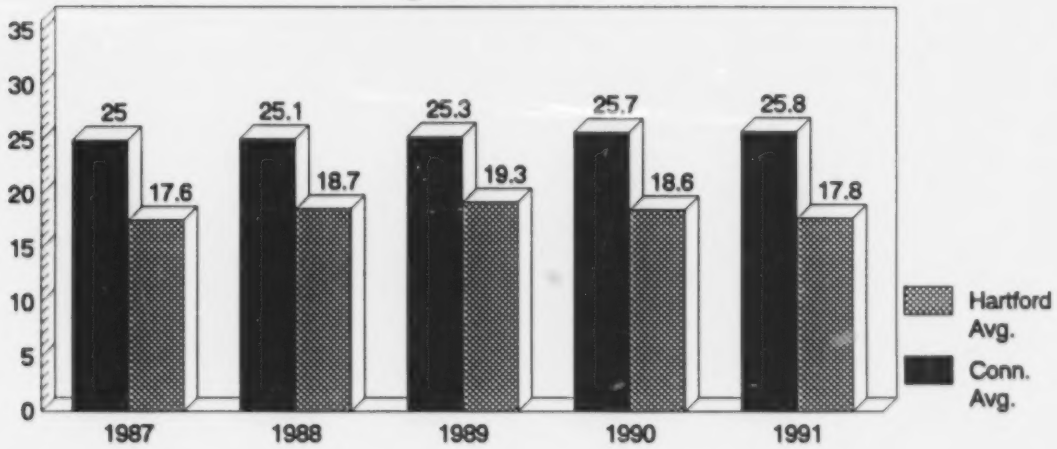


Source: State of Connecticut, Department of Education, 1988-92b.

Figure 3 presents a similar analysis for the eighth grade test. These data are taken from the annual reports on the Connecticut Mastery Testing Program prepared by the Connecticut State Department of Education (State of Connecticut, Department of Education, 1988c; 1989c; 1990c; 1991c; 1992c). The eighth grade mathematics test assesses thirty-six objectives in the domains of conceptual understanding, computational skills, problem solving/applications and measurement/geometry. The test contains four items per objectives or a total of 144 items. Figure 3 indicates that students in eighth grade in Hartford mastered an average of 17.6 objectives in 1987, 18.7 objectives in 1988, 19.3 objectives in 1989, 18.6 objectives in 1990, and 17.8 objectives in 1991. Eighth grade students throughout Connecticut mastered an average of 25 objectives in 1987, 25.1 objectives in 1988, 25.3 objectives in 1989, 25.7 objectives in 1990, and 25.8 objectives in 1991. Thus the gap between the performance of the average Hartford sixth grade students and the average Connecticut sixth grade student was 7.4 objectives in 1987, 6.4 objectives in 1988, 6.0 objectives in 1989, 7.1 objectives in 1990, and 8 objectives..

Figure 3 - Average Number of Mathematics Objectives Mastered - 1987 - 1991

Connecticut Average and Hartford Average
Eighth Grade



Source: State of Connecticut, Department of Education, 1988-92c.

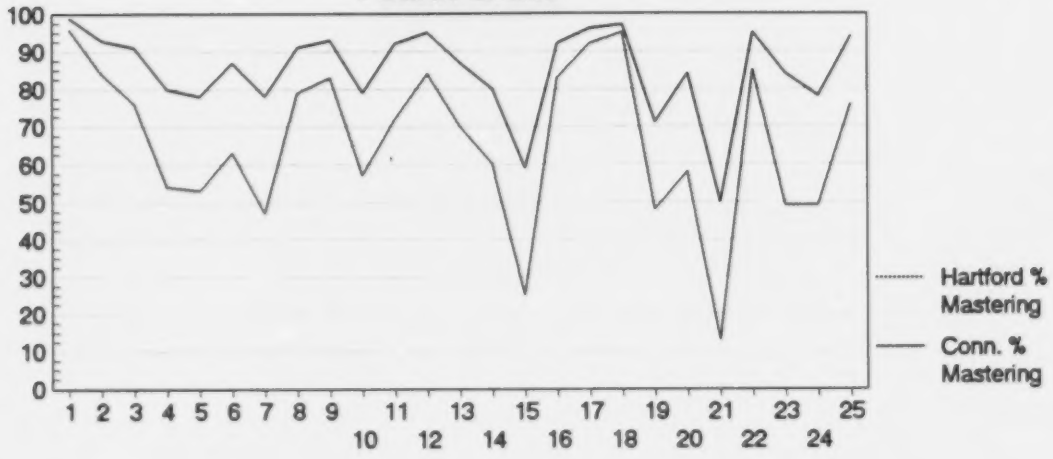
Expressed as a percentage of the objectives on the test, in 1991 Hartford fourth grade students mastered 66% of the objectives compared to the 84.8% of the objectives mastered by students statewide. Hartford sixth grade students mastered 47.5% of the objectives on the sixth grade test compared to the 68.6% of the objectives mastered by students statewide. Hartford eighth grade students mastered 49.4% of the objectives on the eighth grade test compared to the 71.7% of the objectives mastered by students statewide.

Figure 4 provides a more detailed analysis by presenting the percentage of students in Hartford and statewide mastering each of the twenty-five objectives on the fourth grade test in 1991. Hartford students are less likely to master each of the twenty-five objectives on the test than students statewide. Moreover, for certain objectives the Hartford disadvantage is substantial. For example, 37% fewer students in Hartford than statewide demonstrate mastery of rewriting numbers by regrouping and 35% fewer demonstrate mastery of ordering whole numbers. In terms of the four general areas covered by the test, Hartford students fall furthest behind students statewide in the areas of conceptual understanding where, on average, 25.4% fewer Hartford students demonstrate mastery of the objectives. The second greatest Hartford

deficit is in the area of problem solving and applications where, on average, 18.4% fewer Hartford students demonstrate mastery of the objectives. In the area of measurement and geometry, on average, 15.6% fewer Hartford students demonstrate mastery. Finally, in the area of computational skills, on average, 13.8% fewer Hartford students demonstrate mastery on the fourth grade test.

Figure 4 – Percent Mastering Each Mathematics Objective in 1991

Connecticut Average and Hartford Average
Fourth Grade



Key to Fourth Grade Objectives

Measurement and Geometry
1 - identify shapes/angles/sides
2 - determine the value of a set of coins
3 - tell time
4 - estimate length area
5 - measure length/identify units

Problem Solving and Conceptual Understanding
6 - identify needed info in problems
7 - solve story problems with extra info
8 - solve story problems using add/subt
9 - identity # sentences from problems
10 - identify # sentences from pictures
11 - read and interpret tables
12 - read and interpret graphs
13 - identify objects/numbers in array

Computational Skills
14 - multiple and divide by 2, 5, 10
15 - estimate sums and differences
16 - add with regrouping
17 - add/subtract without regrouping
18 - add/subtract facts to 18

Conceptual Understandings
19 - relate multi/div facts to pictures
20 - identify factional parts
21 - rewrite numbers by regrouping
22 - rewrite #'s using expanded notation
23 - order whole numbers
24 - extend patterns
25 - determine 1 & 10 more/less than number

Source: State of Connecticut, Department of Education, 1992a.

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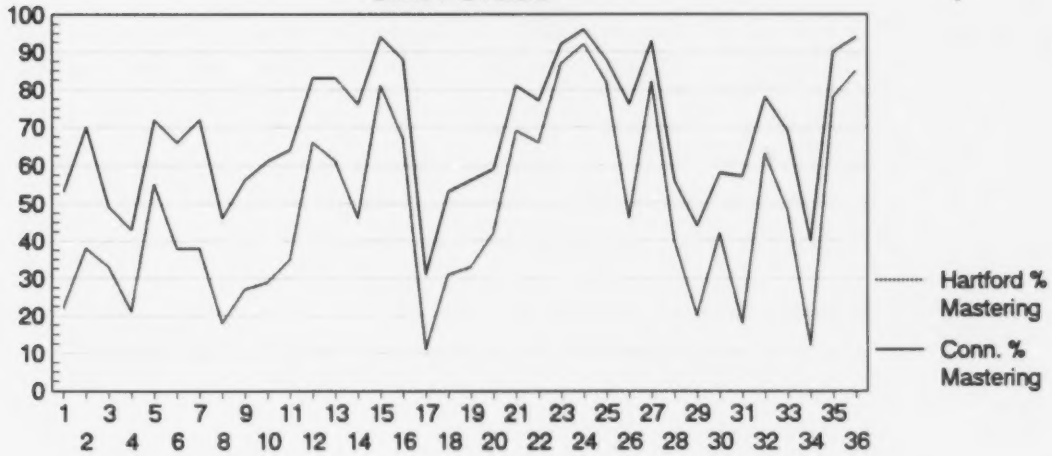
Figure 5 presents the same type of analysis for the sixth grade mathematics test. Hartford students are less likely to master each of the thirty-six objectives on the test than students statewide. Again, for certain objectives the Hartford disadvantage is substantial. For example, 39% fewer students in Hartford than statewide demonstrate mastery of identifying equivalent fractions using pictures and 34% fewer demonstrate mastery of identifying needed information in problems. In terms of the four general areas covered by the test, Hartford students fall furthest behind students statewide in the area of problem solving and applications where, on average, 26.6% fewer Hartford students demonstrate mastery of the objectives. The second greatest Hartford deficit is in the area of measurement and geometry where, on average, 23.6% fewer Hartford students demonstrate mastery. In the area of conceptual understandings, on average, 20.1% fewer Hartford students demonstrate mastery. In the area of computation skills, on average, 13.3% fewer Hartford students demonstrate mastery on the sixth grade test.

Figure 5 – Percent Mastering Each Mathematics Objective in 1991

Connecticut Average and Hartford Average
Sixth Grade



Key to Sixth Grade Objectives

Measurement and Geometry
1 - determine elapsed time
2 - pick approp metric/cust measures & units
3 - estimate lengths and areas
4 - measure/determine perimeters and areas
5 - identify geometric figures

Problem Solving and Applications
6 - solve process problems-data organization
7 - id needed information in problems
8 - id and solve estraneous info problems
9 - estimate a reasonable answer
10 - solve 2-step probs-whole number & $
11 - solve 1-step problems with fractions
12 - solve problems involving making change
13 - solve 1-step probs-whole #'s & money
14 - id number sentences from problems
15 - id graph best fitting given data
16 - interpret graphs, tables and charts

Computational Skills
17 - est sum/diff of fractions & mixed #'s
18 - est prod/quot of whole #'s and money
19 - est sum/diff of whole #'s and money
20 - find fractional parts of whole numbers
21 - add/sub fractions-like denominators
22 - divide whoe numbers by 1-digit numbers
23 - multiple whole numbers & and money amounts
24 - know multiplication and division facts
25 - add/sub whole numbers and money amounts

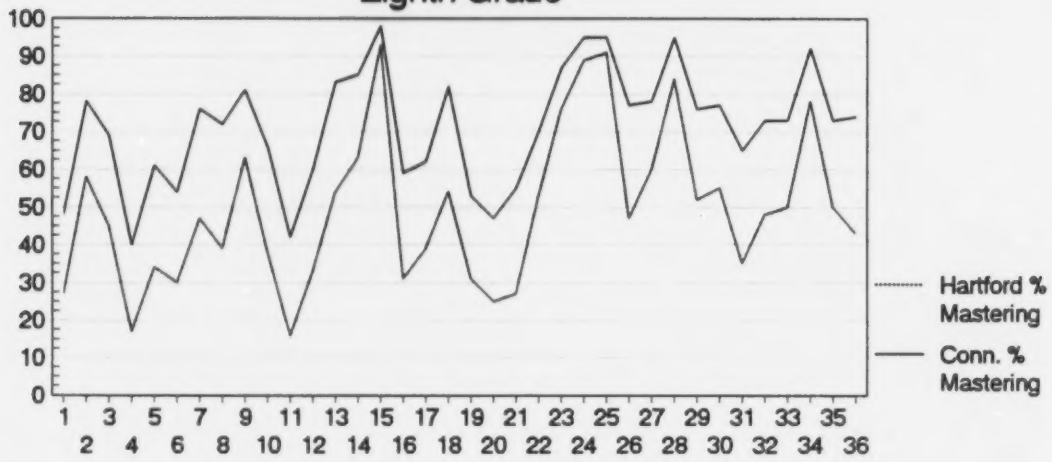
Conceptual Understandings
26 - id procedure for making estimates
27 - extend number/attribute patterns
28 - identify decimals from pictures
29 - convert mixed #'s/improper fractions
30 - id equivalent fractions & mixed numbers
31 - id equivalent fractions using pictures
32 - multiply/divide numbers by 10 and 100
33 - round whole numbers
34 - rename whole numbers by regrouping
35 - id place value and use expanded notation
36 - order whole numbers less than 100, 000

Source: State of Connecticut, Department of Education, 1992b.

Figure 6 presents the analysis of objectives for the eighth grade mathematics test. Hartford students are less likely to master each of the thirty-six objectives on the test than students statewide. The Hartford disadvantage is substantial in a number of cases. For example, 33% fewer students in Hartford than statewide demonstrate mastery of solving extraneous information problem and 31% fewer students in Hartford than statewide demonstrate mastery of ordering fractions. In terms of the four general areas covered by the test, Hartford students fall furthest behind students statewide in the area of problem solving and applications where, on average, 24.1% fewer Hartford students demonstrate mastery of the objectives. The second greatest Hartford deficit is in the area of measurement and geometry where, on average, 23% fewer Hartford students demonstrate mastery. In the area of conceptual understandings, on average 22.8% fewer Hartford students demonstrate mastery. In the area of computational skills, on average, 18.9% fewer Hartford students demonstrate mastery on the eighth grade test.

Figure 6 – Percent Mastering Each Mathematics Objective in 1991

Connecticut Average and Hartford Average Eighth Grade



Key to Eighth Grade Objectives

Measurement and Geometry
1 - conversion within measurement systems
2 - pick approp metric/cust measures & units
3 - est length/area/volume/angle measure
4 - measure/determine perimeters/areas
5 - identify figures using geometric terms

Problem Solving and Applications
6 - solve process problems-data organization
7 - id needed info in problem situations
8 - solve extraneous information problems
9 - estimate a reasonable answer
10 - solve problems involving elem probability
11 - solve problems involving measurement
12 - solve 1-, 2-step problems-fractions
13 - solve 1-, 2-step probs-whole #'s and dec
14 - interpret graphs, tables and charts
15 - add/sub/mult/div with calculator

Computational Skills
16 - est frac parts/% of whole numbers
17 - est prod/quot of whole numbers and dec
18 - est sum/diff of whole numbers and dec
19 - determine the percent of a number
20 - multiply fractions and mixed numbers
21 - add/sub fractions and mixed numbers
22 - id corr place of dec point in mult/div
23 - add and subtract decimals
24 - multiply and divide whole numbers
25 - add and subtract whole numbers

Conceptual Understandings
26 - id procedures for frac/dec estimation
27 - id ratios and fractional parts from data
28 - id points on number lines, scales, grids
29 - convert fract/dec to percent, vice versa
30 - convert factions to decimals, vice versa
31 - id fract, dec, percents from pictures
32 - mult/div whole numbers by 10, 100, 1000
33 - round decimals to nearest 1, .1, .01
34 - round whole numbers
35 - order decimals
36 - order fractions

Source: State of Connecticut, Department of Education, 1992c.

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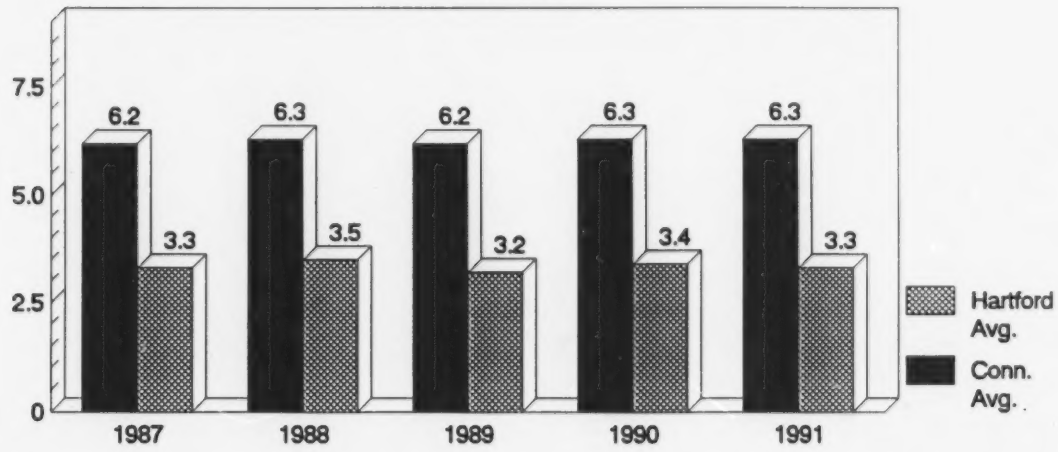
b) Language Arts

Figure 7 presents the average performance of students in Hartford and throughout the state of Connecticut in terms of the number of language arts objectives mastered on the fourth grade tests for 1987, 1988, 1989, 1990, and 1991. The language arts test encompasses nine objectives in the domains of reading comprehension, listening comprehension, locating information, and writing mechanics. The test contains 103 items.

Figure 7 - Average Number of Lang. Arts Objs. Mastered - 1987 - 1991

Connecticut Average and Hartford Average
Fourth Grade



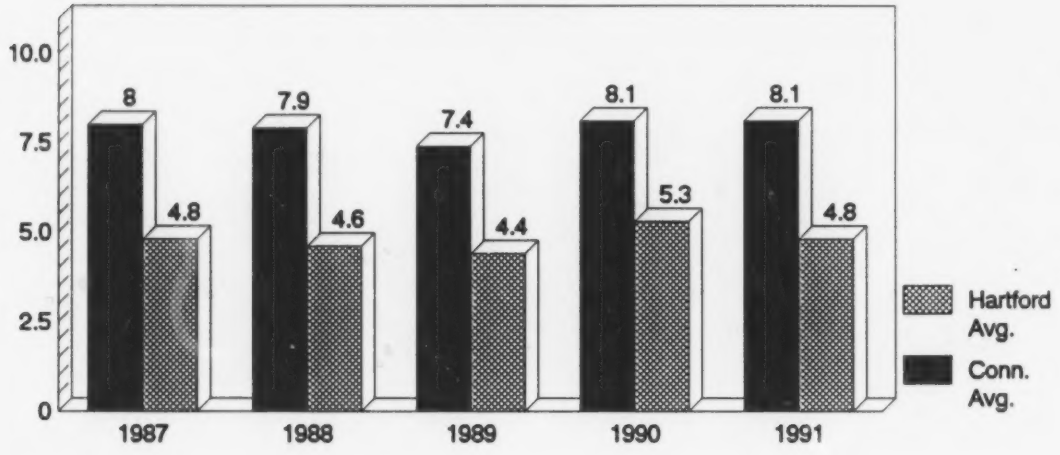
Source: State of Connecticut, Department of Education, 1992a.

Figure 7 indicates that students in fourth grade in Hartford mastered an average of 3.3 of nine objectives in 1987, 3.5 objectives in 1988, 3.2 objectives in 1989, 3.4 objectives in 1990, and 3.3 objectives in 1991. Students throughout Connecticut mastered an average of 6.2 of nine objectives in 1987, and 6.3 objectives in 1988, 1989, 1990, and 1991. Thus the gap between Hartford students and students statewide remained about the same for over the five years.

Figure 8 presents the same kind of analysis of the language arts test results for the sixth grade test. These data are taken from the annual reports on the Connecticut Mastery Testing Program prepared by the Connecticut State Department of Education (State of Connecticut, Department of Education, 1988b; 1989b; 1990b; 1991b; 1992b). The 112 item test covered 11 objectives in the areas of reading comprehension, listening comprehension, study skills, and writing mechanics. Figure 8 indicates that students in the sixth grade in Hartford mastered an average of 4.8 objectives in 1987 and 1991, 4.6 objectives in 1988, 4.4 objectives in 1989, and 5.3 objectives in 1990. Students throughout the state mastered an average of 8 objectives in 1987, 7.9 objectives in 1988, 7.4 objectives in 1989, and 8.1 objectives in 1990 and 1991. Thus the gap between the average Hartford sixth grade student and the average Connecticut sixth grade students was 3.2 objectives in 1987, 3.3 objectives in 1988, 3 objectives in 1989, 2.8 objectives in 1990, and 3.3 objectives in 1991.

Figure 8 – Average Number of Lang. Arts Objs. Mastered – 1987 – 1991

Connecticut Average and Hartford Average
Sixth Grade



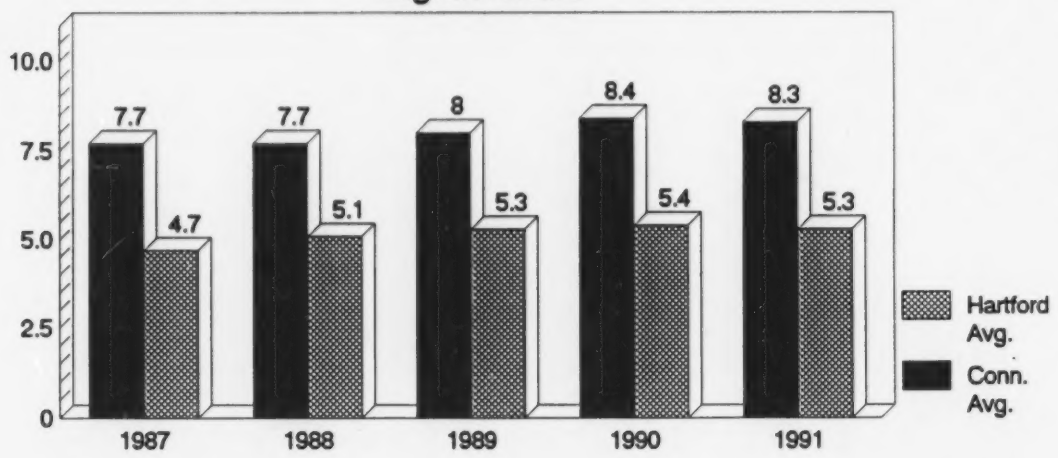
Source: State of Connecticut, Department of Education, 1992b.

Figure 9 presents a similar analysis for the eighth grade language arts test. These data are taken from the annual reports on the Connecticut Mastery Testing

Program prepared by the Connecticut State Department of Education (State of Connecticut, Department of Education, 1988c; 1989c; 1990c; 1991c; 1992c). The eighth grade language arts test uses 111 items to cover 11 objectives in the areas of reading comprehension, listening comprehension, study skills, and writing mechanics. Figure 9 indicates that students in the eighth grade in Hartford mastered an average of 4.7 objectives in 1987, 5.1 objectives in 1988, 5.3 objectives in 1989, 5.4 objectives in 1990, and 5.3 objectives in 1991. Students throughout the state mastered an average of 7.7 objectives in 1987 and 1988, 8 objectives in 1989, 8.4 objectives in 1990, and 8.3 objectives in 1991. Thus the gap between the average Hartford eighth grade student and the average Connecticut eighth grade student was 3 objectives in 1987, 1990, and 1991, 2.6 objectives in 1988, and 2.7 objectives in 1989.

Figure 9 - Average Number of Lang. Arts Objs. Mastered - 1987 - 1991

Connecticut Average and Hartford Average Eighth Grade



Source: State of Connecticut, Department of Education, 1992c.

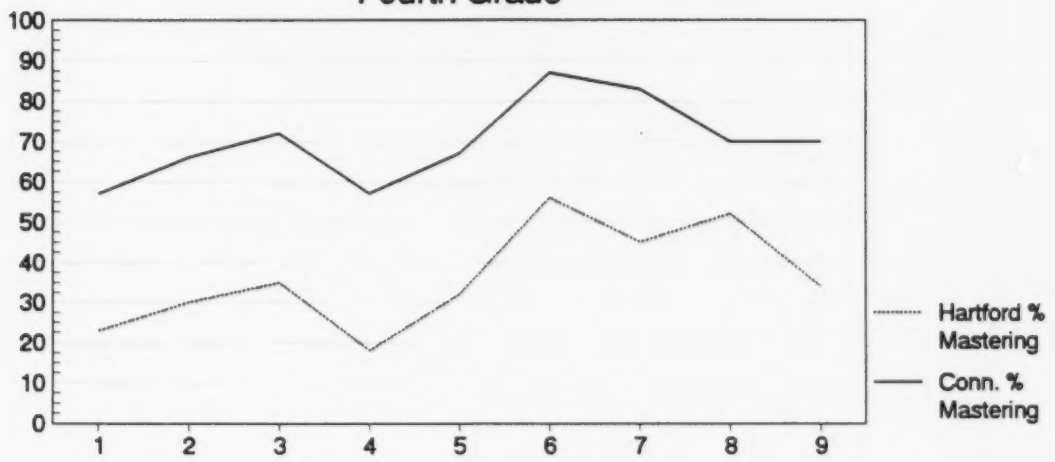
Expressed as a percentage of the objectives on the test, in 1991 Hartford fourth grade students mastered 36.7% of the objectives on the fourth grade language arts tests compared to 70% if the objectives mastered by students statewide. Hartford sixth grade students mastered 43.6% of the objectives on the test compared to 73.6%

mastered by students statewide. Hartford eighth grade students mastered 48.2% of the objectives on the eighth grade language arts test compared to 75.5% of the objectives mastered by students statewide.

Figure 10 presents the percentage of students in Hartford and statewide mastering each of the nine objectives on the fourth grade language arts test in 1991. Hartford students are less likely to master each of the nine objectives on the test than students statewide. At least 34% fewer students in Hartford than statewide demonstrate mastery of eight of the nine objectives; only 18% fewer Hartford students than statewide demonstrate mastery on the spelling objective.

Figure 10 – Percent Mastering Each Language Arts Objective in 1991

Connecticut Average and Hartford Average Fourth Grade



Key to Fourth Grade Objectives

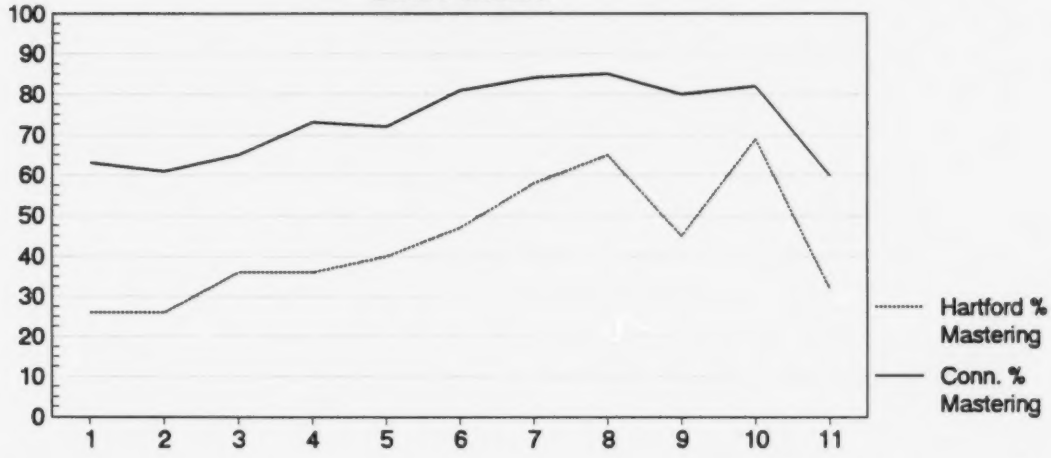
Reading Comprehension
1 - evaluative
2 - inferential
3 - literal
Listening Comprehension
4 - inferential and evaluative
5 - literal
Locating Information
6 - schedules, maps, table of contents dictionary
Writing Mechanics
7 - agreement
8 - spelling (words/homonyms/abbreviations)
9 - capitalization and punctuation

Source: State of Connecticut, Department of Education, 1992a.

Figure 11 presents the same type of analysis for the sixth grade language arts test. Hartford students are less likely to master each of the eleven objectives. For nine of the eleven objectives, at least 26% fewer Hartford students demonstrate mastery; only 20% fewer Hartford students than statewide demonstrate mastery on the writing tone objective and only 13% fewer Hartford students demonstrate mastery on the spelling objective.

Figure 11 – Percent Mastering Each Language Arts Objective in 1991

Connecticut Average and Hartford Average Sixth Grade



Key to Sixth Grade Test

Reading Comprehension
1 - evaluative
2 - inferential
3 - literal

Listening Comprehension
4 - inferential and evaluative
5 - literal

Study Skills
6 - notetaking and outlining
7 - locating information

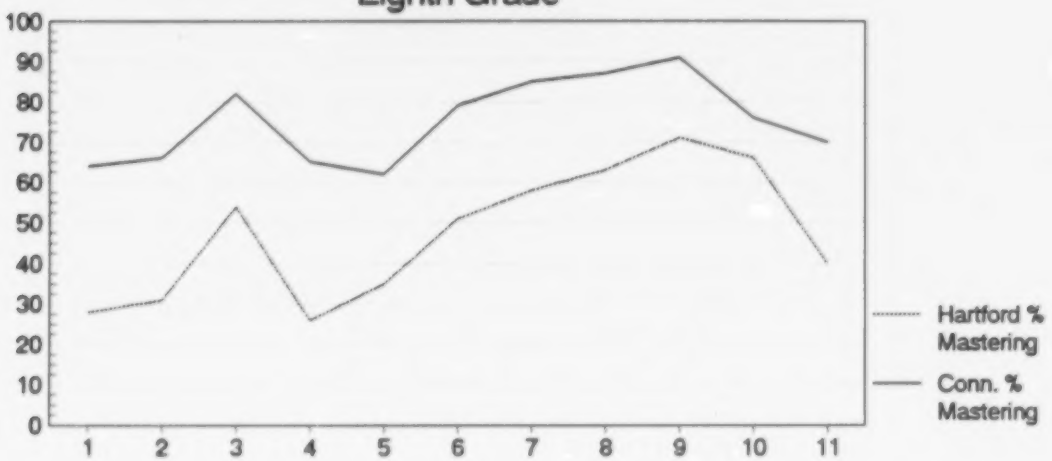
Writing Mechanics
8 - tone
9 - agreement
10 - spelling (words/homonyms/abbreviations)
11 - capitalization and punctation

Source: State of Connecticut, Department of Education, 1992b.

Figure 12 presents the same analysis for the eighth grade language arts test. Hartford students are less likely to master each of the eleven objectives. For eight of the eleven objectives, at least 27% fewer Hartford students than statewide demonstrate mastery; only 24% fewer Hartford students demonstrate mastery on the writing tone objective, only 20% fewer Hartford students demonstrate mastery on the writing agreement objective, and only 10% fewer Hartford students demonstrate mastery on the spelling objective.

Figure 12 – Percent Mastering Each Language Arts Objective in 1991

Connecticut Average and Hartford Average
Eighth Grade



Eighth Grade Objectives

Reading Comprehension
1 - evaluative
2 - inferential
3 - literal

Listening Comprehension
4 - inferential and evaluative
5 - literal

Study Skills
6 - notetaking and outlining
7 - locating information

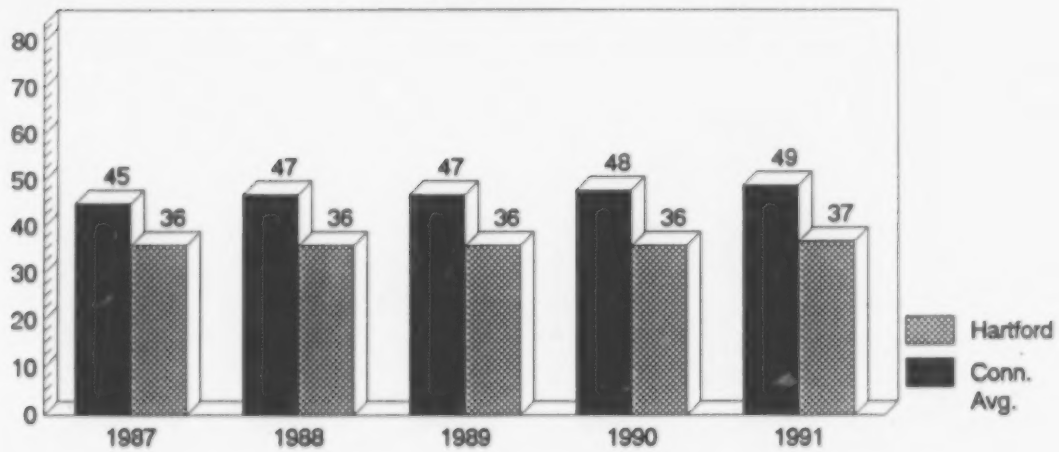
Writing Mechanics
8 - tone
9 - agreement
10 - spelling (words/homonyms/abbreviations)
11 - capitalization and punctuation

Source: State of Connecticut, Department of Education, 1992c.

Figure 13 presents the average DRP unit scores of fourth grade students in Hartford and throughout the state of Connecticut for 1987, 1988, 1989, 1990, and 1991. Scores are reported in DRP units which identify the difficulty or readibility level of prose that students can comprehend. For example, average elementary textbooks for grades 3 to 5 range from 35 to 58 DRP units in difficulty. Figure 13 indicates that students in Hartford scored 36 DRP units in 1987, 1988, 1989, and 1990. Hartford students scored 37 DRP units in 1991. Students throughout Connecticut scored 45 DRP units in 1987, 47 DRP units in 1988 and 1989, 48 DRP units in 1990, and 49 DRP units in 1991. Thus the gap between Hartford students and students statewide was 9 DRP units in 1987, 11 DRP units in 1988 and 1989, and 12 DRP units in 1990 and 1991.

Figure 13 - Average DRP Unit Score 1987 - 1991

Connecticut Average and Hartford Average Fourth Grade



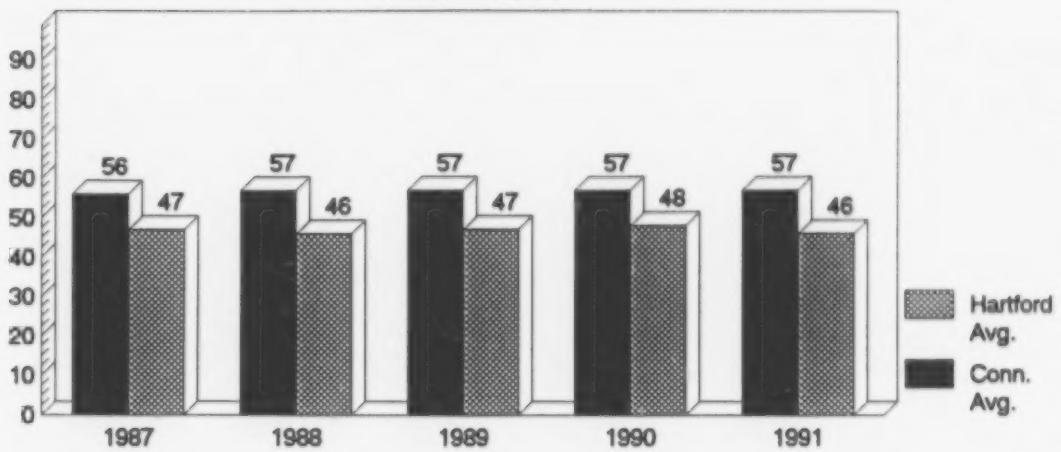
Source: State of Connecticut, Department of Education, 1988-92a.

Figure 14 presents the average DRP unit scores of sixth grade students in Hartford and throughout the state of Connecticut for 1987, 1988, 1989, 1990, and 1991. Students in Hartford scores 47 DRP units in 1987 and 1989, 46 DRP units in 1988 and 1991, and 48 DRP units in 1990. Students throughout Connecticut scores 56 DRP units in 1987 and 57 DRP units in 1988, 1989, 1990, and 1991. Thus the gap

between Hartford students and students statewide was 9 DRP units in 1987 and 1990, 11 DRP units in 1988 and 1991, and 10 DRP units in 1989.

Figure 14 – Average DRP Unit Score 1987 – 1991

Connecticut Average and Hartford Average Sixth Grade

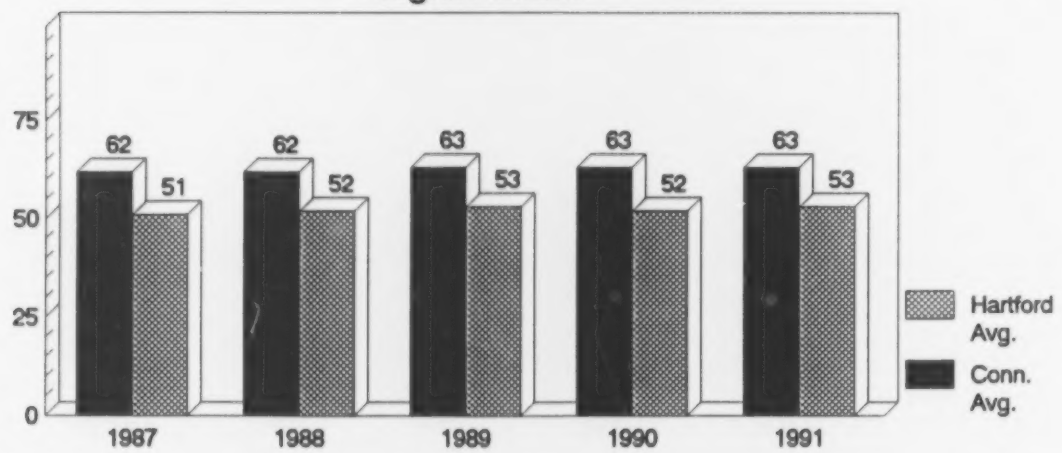


Source: State of Connecticut, Department of Education, 1988-92b.

Figure 15 presents the average DRP unit scores of eighth grade students in Hartford and throughout the state of Connecticut for 1987, 1988, 1989, 1990, and 1991. Students in Hartford score 51 DRP units in 1987, 52 DRP units in 1988 and 1990, and 53 DRP units in 1989 and 1991. Students throughout Connecticut scored 62 DRP units in 1987 and 1988, and 63 DRP units in 1989, 1990, and 1991. Thus the gap between Hartford students and students statewide was 11 DRP units in 1987 and 1990, and 10 DRP units in 1988, 1989, and 1991.

Figure 15 - Average DRP Unit Score 1987 - 1991

Connecticut Average and Hartford Average Eighth Grade

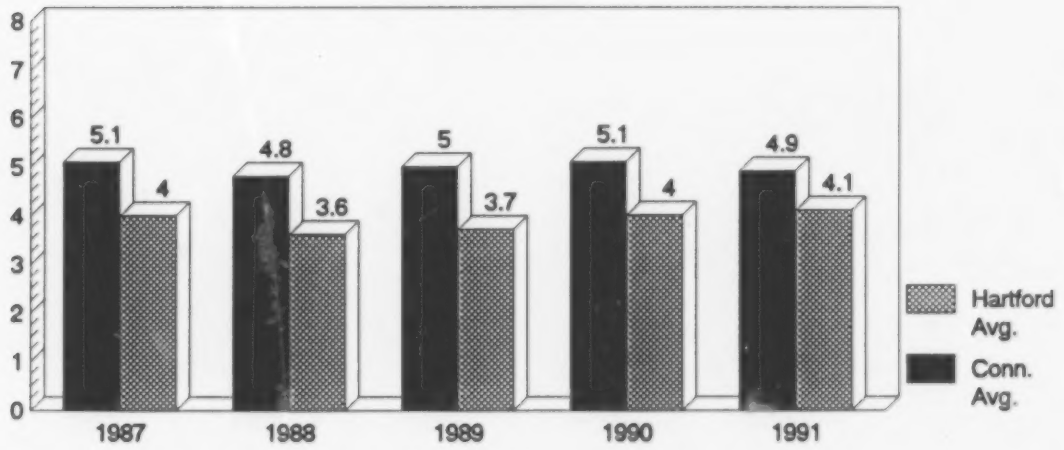


Source: State of Connecticut, Department of Education, 1988-92c.

Figure 16 presents the average holistic scores in writing for fourth grade students in Hartford and throughout the state of Connecticut for 1987, 1988, 1989, 1990, and 1991. "Holistic scoring is an impressionistic and quick scoring process that rates written products on the basis of their overall quality" (State of Connecticut, Department of Education, 1992a: 9). Each student paper received a final score between 2 and 8, with 2 representing a poor paper and 8 representing a superior paper. Figure 16 indicates that fourth grade students in Hartford had average holistic scores of 4 in 1987, 3.6 in 1988, 3.7 in 1989, 4 in 1990, and 4.1 in 1991. Students throughout Connecticut scored 5.1 in 1987, 4.8 in 1988, 5 in 1989, 5.1 in 1990, and 4.9 in 1991. Thus the gap between Hartford students and students statewide was 1.1 in 1987, 1.2 in 1988, 1.3 in 1989, 1.1 in 1990, and .8 in 1991.

Figure 16 – Average Holistic Scores in Writing – 1987 – 1991

Connecticut Average and Hartford Average
Fourth Grade

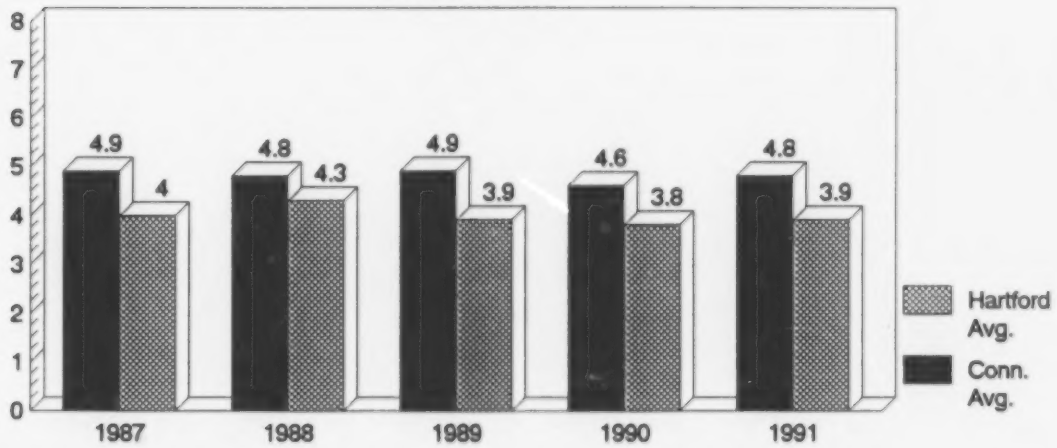


Source: State of Connecticut, Department of Education, 1988-92a.

Figure 17 presents the average holistic scores in writing for sixth grade students in Hartford and throughout the state of Connecticut for 1987, 1988, 1989, 1990, and 1991. Figure 17 indicates that sixth grade students in Hartford had average holistic scores of 4 in 1987, 4.3 in 1988, 3.9 in 1989, 3.8 in 1990, and 3.9 in 1991. Students throughout Connecticut scored 4.9 in 1987, 4.8 in 1988, 4.9 in 1989, 4.6 in 1990, and 4.8 in 1991. Thus the gap between Hartford students and students statewide was .9 in 1987, .5 in 1988, 1.0 in 1989, .8 in 1990, and .9 in 1991.

Figure 17 – Average Holistic Scores in Writing – 1987 – 1991

Connecticut Average and Hartford Average
Sixth Grade

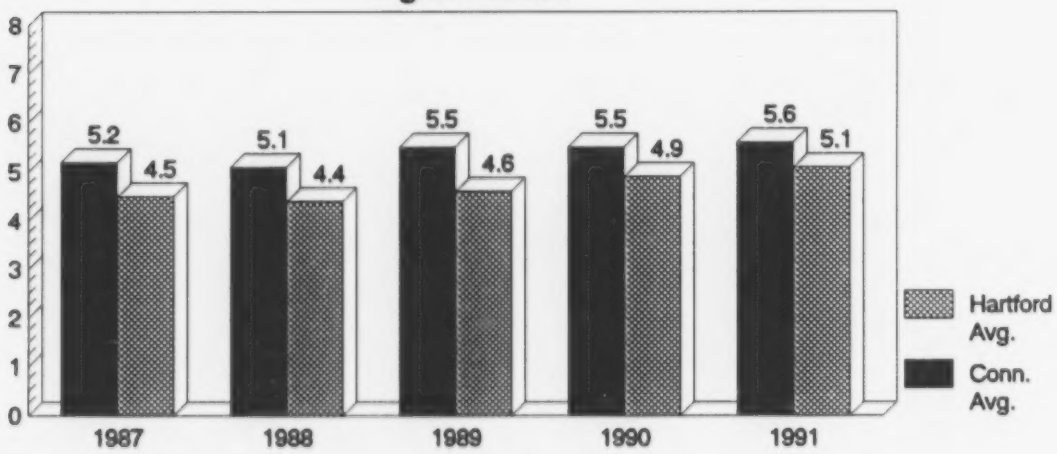


Source: State of Connecticut, Department of Education, 1988-92b.

Figure 18 presents the average holistic scores in writing for eighth grade students in Hartford and throughout the state of Connecticut for 1987, 1988, 1989, 1990, and 1991. Figure 18 indicates that eighth grade students in Hartford had average holistic scores of 4.5 in 1987, 4.4 in 1988, 4.6 in 1989, 4.9 in 1990, and 5.1 in 1991. Students throughout Connecticut scored 5.2 in 1987, 5.1 in 1988, 5.5 in 1989 and 1990, and 5.6 in 1991. Thus the gap between Hartford students and students statewide was .7 in 1987 and 1988, .9 in 1989, .6 in 1990, and .5 in 1991.

Figure 18 – Average Holistic Scores in Writing – 1987 – 1991

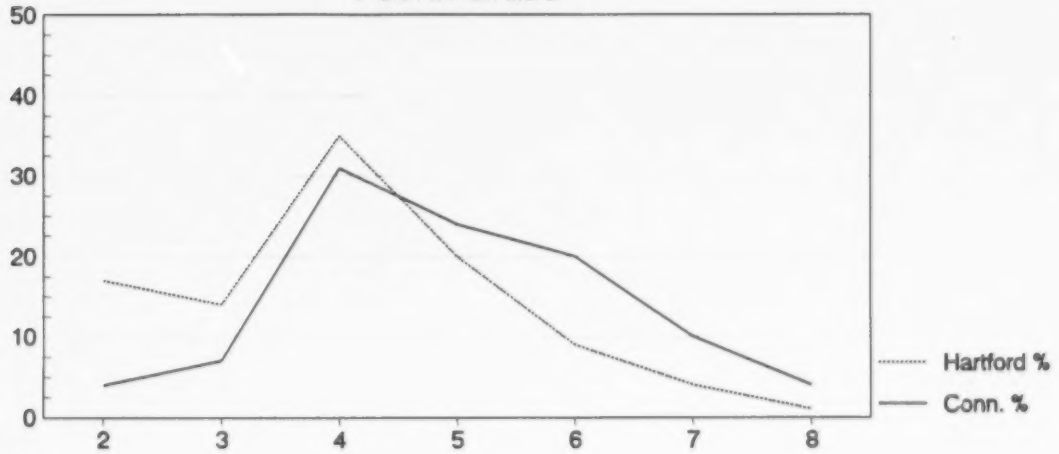
Connecticut Average and Hartford Average
Eighth Grade



Source: State of Connecticut, Department of Education, 1988-92c.

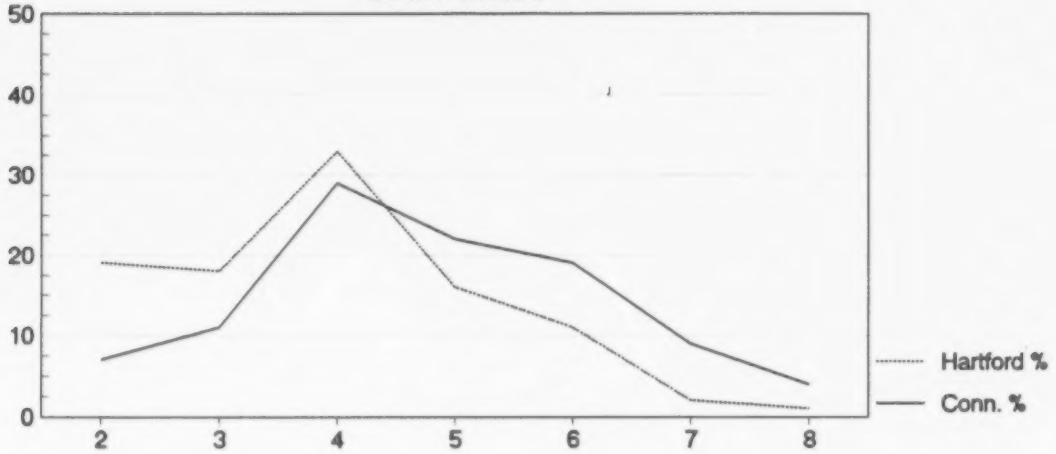
Figures 19, 20, and 21 depict the percentages of students scoring at each holistic score level on the fourth, sixth, and eighth grade tests, respectively, in 1991. For all three tests, greater proportions of Hartford students than students statewide score at levels 2, 3, and 4, the lowest scores in the range. Again, for all three tests, lower proportions of Hartford students than students statewide score at levels 5, 6, 7, and 8, the highest scores in the range.

Figure 19 – Percent of Connecticut and Hartford Students at Each Holistic Writing Score Level in 1991 Fourth Grade



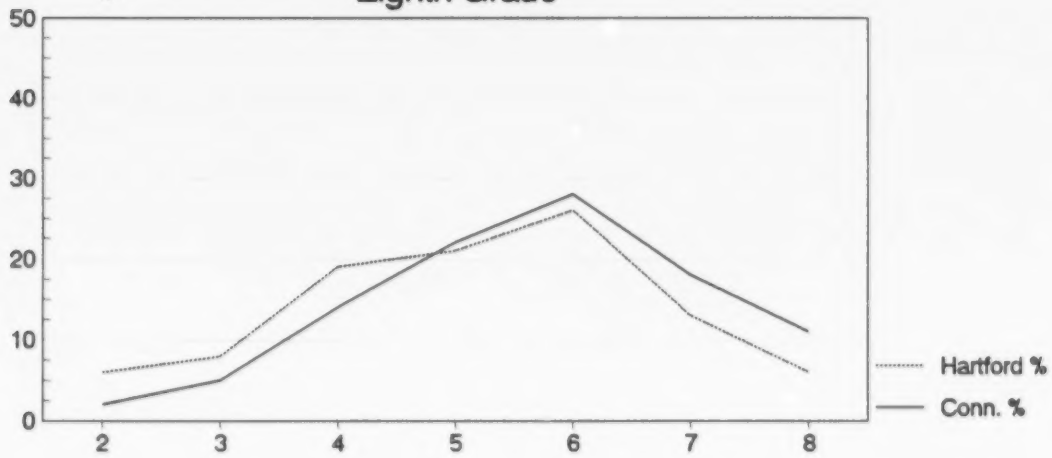
Source: State of Connecticut, Department of Education, 1992a.

Figure 20 – Percent of Connecticut and Hartford Students at Each Holistic Writing Score Level in 1991 Sixth Grade



Source: State of Connecticut, Department of Education, 1992b.

Figure 21 – Percent of Connecticut and Hartford Students at Each Holistic Writing Score Level in 1991 Eighth Grade



Source: State of Connecticut, Department of Education, 1992c.

Before reaching conclusions about the performance of Hartford students overall, it is important to consider the proportions of total Hartford students that actually participated in the tests. Figure 22 presents the percentages of Hartford fourth grade students students and fourth grade students statewide tested in the four areas in 1991 as well as the percentages who were deemed eligible in the four areas but who were not tested, and those who were deemed exempt. In mathematics, 84.5% of the total Hartford students were tested, 3.2% were deemed eligible but not tested, and 12.3% were deemed exempt. The corresponding figures for the math test for students statewide were 93.9% tested, .5% eligible but not tested, and 5.6% deemed exempt.

For the language arts test 84.8% of total Hartford students took the test, 2.9% were eligible but not tested, and 12.3% were deemed exempt. The corresponding figures for the language arts test for students statewide were 93.6% tested, .8% eligible but not tested, and 5.6% deemed exempt.

For the writing test, 79.0% of Hartford students were tested, 8.7% were eligible but not tested, and 12.3% were exempt. The corresponding statewide figures for the writing test were 92.3% tested, 2.1% eligible but not tested, and 5.6% exempt.

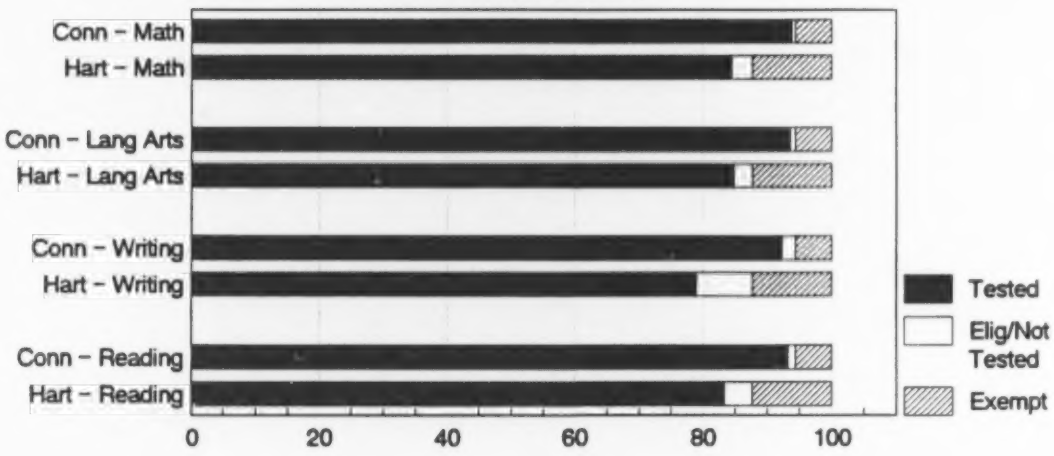
The for reading test, 83.4% of Hartford students were tested, 4.3% were eligible but not tested, and 12.3% were exempt. The compares to statewide figures of 93.3% tested, 1.1% eligible but not tested, and 5.6% exempt.

Thus, compared to students statewide, 9.4% fewer Hartford students were tested in mathematics, 8.8% fewer were tested in language arts, 13.3% fewer were tested in writing, and 9.90% fewer were tested in reading.[6]

Figure 22 – Percent of Connecticut and Hartford Students Tested in Four Areas

1991

Fourth Grade



Source: State of Connecticut, Department of Education, 1992a.

Figure 23 presents the percentages of Hartford sixth grade students and sixth grade students statewide tested in the four areas in the 1991 tests. In mathematics 87.3% of total Hartford sixth grade students were tested, 2.0% were eligible but not tested, and 10.7% were exempt. The statewide figures were 94.2% tested, .5% eligible but not tested, and 5.3% exempt.

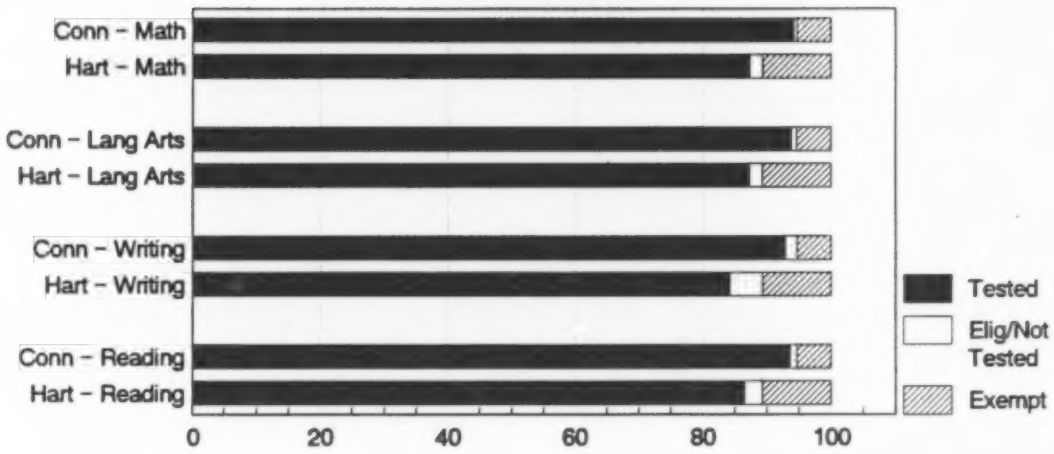
For the language arts test 87.3% of total Hartford sixth grade students were tested, 2.0% were eligible but not tested, and 10.7% were exempt. The statewide figures were 93.9% tested, .8% eligible but not tested, and 5.3% exempt.

On the writing test 84.2% of Hartford sixth grade students were tested, 5.1% were eligible but not tested, and 10.7% were exempt. The statewide figures were 92.9% tested, 1.8% eligible but not tested, and 5.3% exempt.

On the reading test 86.6% of Hartford sixth graders were tested, 2.7% were eligible but not tested, and 10.7% were exempt. Statewide 93.6% of sixth graders were tested, 1.1% were eligible but not tested, and 5.3% were exempt.

Thus, compared to sixth grade students statewide, 6.9% fewer Hartford students were tested in mathematics, 6.6% fewer were tested in language, 8.7% fewer were tested in writing, and 7% fewer Hartford students were tested in reading.

Figure 23 – Percent of Connecticut and Hartford Students Tested in Four Areas
1991
Sixth Grade



Source: State of Connecticut, Department of Education, 1992b.

Figure 24 presents the percentages of Hartford eighth grade students and eighth grade students statewide tested in the four areas in the 1991 tests. In mathematics 85.4% of Hartford eighth grade students were tested, 2.0% were eligible but not tested, and 12.6% were exempt. The statewide figures were 94.2% tested, .8% eligible but not tested, and 5.0% exempt.

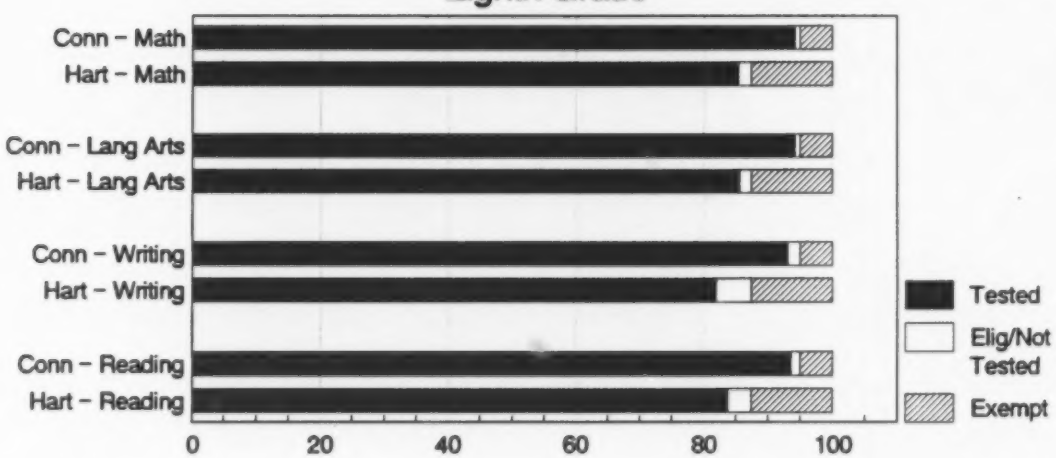
In language arts 85.6% of Hartford eighth grade students were tested, 1.8% were eligible but not tested, and 12.6% were exempt. The statewide figures were 94.2% tested, .8% eligible but not tested, and 5.0% exempt.

In writing 81.9% of Hartford eighth grade students were tested, 5.5% were eligible but not tested, and 12.6% were exempt. Statewide 93.1% were tested, 1.9% were eligible but not tested, and 5.0% were exempt.

In reading 83.8% of Hartford eighth grade students were tested, 3.6% were eligible but not tested, and 12.6% were exempt. The comparable statewide figures were 93.6% tested, 1.4% eligible but not tested, and 5.0% exempt.

Figure 24 – Percent of Connecticut and Hartford Students Tested in Four Areas

1991
Eighth Grade



Source: State of Connecticut, Department of Education, 1992c.

The overall pattern revealed in these analyses of Connecticut Mastery Test results is clear and consistent. Hartford students, on average, perform poorly in both absolute terms and in relation to the performance of students statewide. The analyses revealed a pattern of inferior performance for the average Hartford student in all four subjects, in every subarea, on every objective, on each grade level, for all five years of testing. In many cases the performance deficit of the average Hartford student is quite substantial. Moreover, since a greater proportion of Hartford students, than students statewide, never even take the tests, and since those not taking the tests are likely to perform at lower levels if they took the tests, these already clear and substantial patterns of inferior performance for Hartford students, underestimate the performance deficits of students in the Hartford public schools.

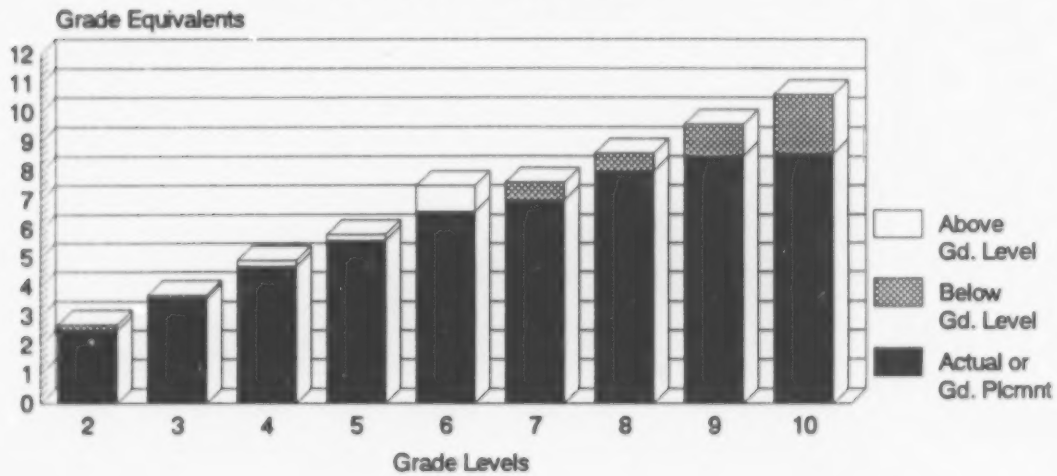
2. MAT

The Hartford Public Schools administer the Metropolitan Achievement Test, sixth edition (MAT6), in the areas of reading, language arts, and mathematics to students in grades 2 through 10. The district reports student scores periodically (Hartford Public Schools, 1990, 1991). Figures 25, 26, and 27 present the results for the tests administered during the 1990-91 school year in mathematics, language, and reading, respectively. The tests were administered during the seventh month of the school year in grade 2 through 4 and during the sixth month of the school year in grades 5 through 10 so the grade placements for students in grades 2 through 10 would be 2.7, 3.7, 4.7, 5.6, 6.6, 7.6, 8.6, 9.6, and 10.6.

Figure 25 presents the results on the mathematics test. At each grade level from the second through the tenth grade, the black shaded areas of the bar indicate the actual performance level of students at that grade level (or, when the grade equivalent performance level exceeds the grade placement, the black shaded areas of the bar indicate the grade placement), the mixed pattern areas of the bar indicate the extent to which the actual performance level of students in that grade fall below the grade placement, and the white areas of the bar indicate the extent to which the actual grade equivalent performance levels of students in that grade exceed the grade placement. Figure 25 indicates that on the mathematics section of the MAT, the average performance of Hartford students in the fourth, fifth, and sixth grades exceeds the grade placement level by .2, .2. and .9, respectively. At the second and third grades the actual average performance of Hartford students falls below the grade placement level by .2 and .1, respectively. From the seventh through the tenth grades, the actual average performance of Hartford students falls below the grade placement level by .6, .6, 1.1, and 2.0, respectively.

Figure 25 - Hartford MAT6 Scores in Gd. Equivalents Relative to Gd. Placemnt

Mathematics - 1990-1991

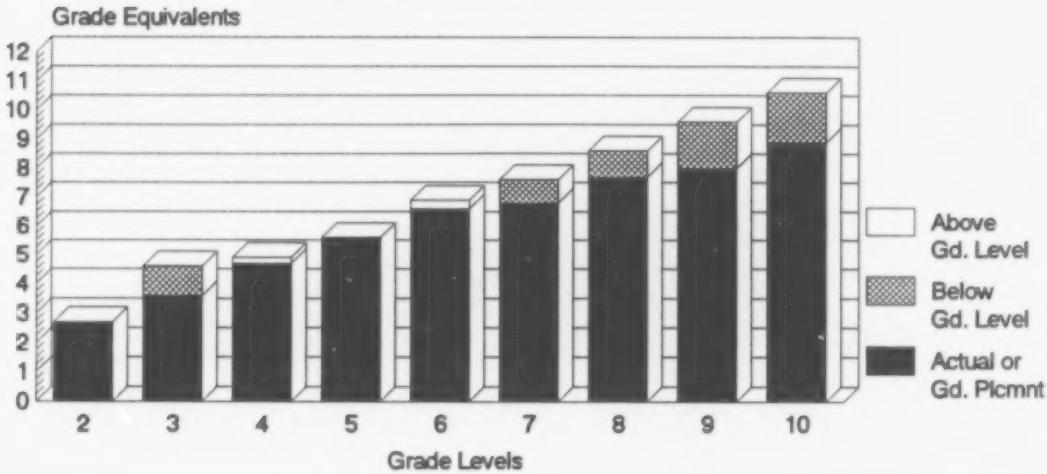


*Source: Hartford Public Schools. (1991). Group Test Results - 1990-91. Hartford, CT., p. 10.

Figure 26 follows the format of Figure 25 to present the results on the language test. Figure 26 indicates that on the language section of the MAT, the average performance of Hartford students in the fourth and sixth grades exceeds the grade placement level by .2 and .3, respectively. At the second grade, the average performance equals the grade placement level, and at the third grade the average performance falls below the grade placement level by .1. From the seventh through the tenth grades, the actual average performance of Hartford students falls below the grade placement level by .8, .9, 1.6, and 1.7, respectively.

Figure 26 – Hartford MAT6 Scores in Gd. Equivalents Relative to Gd. Placemnt

Language – 1990–1991

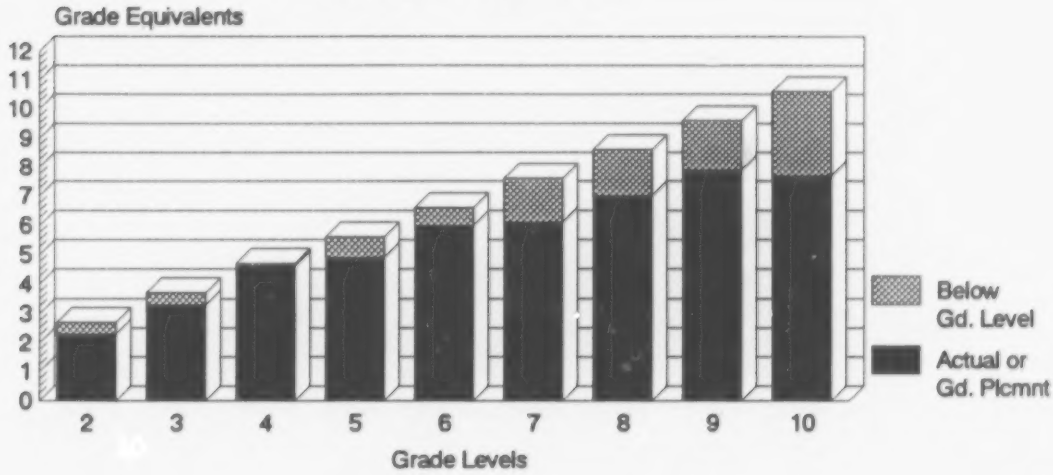


*Source: Hartford Public Schools. (1991). Group Test Results - 1990-91. Hartford, CT., p. 10.

Figure 27 follows the same format to present the results on the reading test. Figure 27 indicates that on the reading section of the MAT, the average performance of Hartford students falls below the grade placement level at every grade from second through tenth. From the second through the tenth grades, the actual average performance of Hartford students falls below the grade placement level by .4, .4, .1, .7, .6, 1.5, 1.7, and 2.9, respectively.

Figure 27 - Hartford MAT6 Scores in Gd. Equivalents Relative to Gd. Placemnt

Reading - 1990-1991



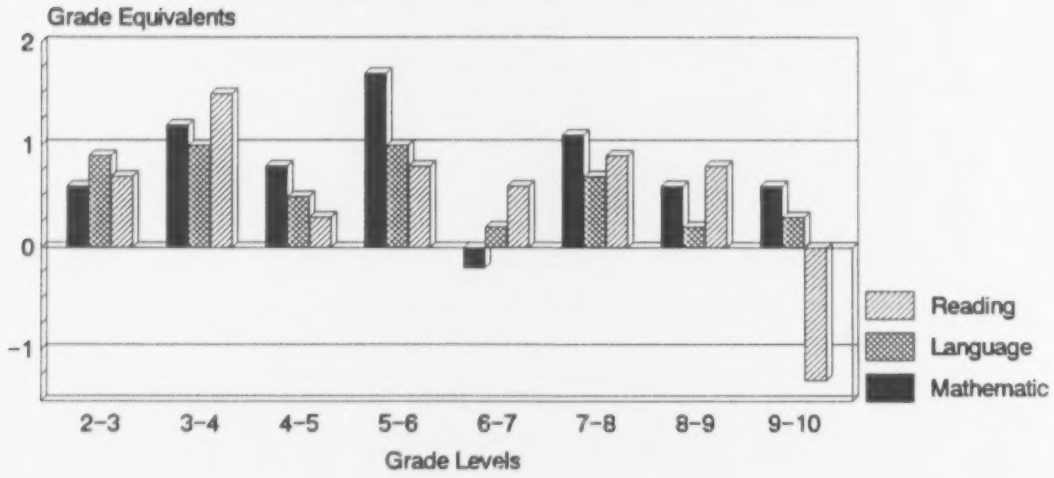
*Source: Hartford Public Schools. (1991). Group Test Results - 1990-91. Hartford, CT., p. 10.

The average Hartford student tests below the grade level equivalent in language and mathematics from the seventh through the tenth grades and in reading from the second through the tenth grades. Moreover, there is a tendency for students at higher grade levels to be further behind in terms of grade level equivalents.

Although the overall test results presented in Figures 25, 26, and 27 provide a global portrait of the performance of Hartford students, they include the scores of students who may have recently moved into the district and whose performance could be affected only marginally by the educational program of the Hartford Public Schools. A more satisfactory strategy for understanding the impact of the educational program in Hartford would be to follow a group of students in the system over time. Figure 28 presents data on the MAT6 performance of the same students followed from one grade level to the next beginning with students moving from second grade in 1989 to third grade in 1990 and continuing through students moving from ninth grade in 1989 to tenth grade in 1990. Figure 28 presents the growth in student performance in language, mathematics, and reading in grade equivalents over the one year period

during which time the expected growth would be 1.0 years. Only for those students moving from the third to the fourth grade is there growth of 1.0 or greater in all three areas. The average year-to-year growth in mathematics, language, and reading is .80, .60, and .54, respectively. Thus average growth in these areas for this more stable group of Hartford students is below that expected from national norms.

Figure 28 - Hartford MAT6 Matched Scores Year-to-Year Changes in Grade Equivalents - 1990-1991

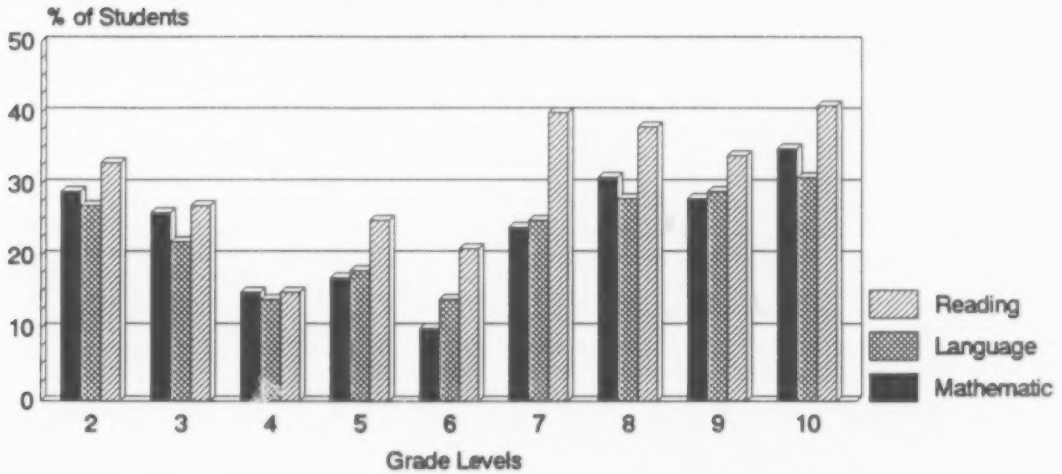


*Source: Hartford Public Schools. (1991). Group Test Results - 1990-91. Hartford, CT., p. 11.

This particular pattern of student performance, in addition to portraying student academic growth as relatively unimpressive, also provide additional perspective on the disappointing results of Hartford students on the Connecticut Mastery Tests. The three periods during which Hartford students experienced the highest average academic growth in language, mathematics, and reading conclude in the same year students take the Connecticut Mastery Tests. This pattern suggests that the Hartford Public Schools may be mounting special efforts to prepare students for the Connecticut Mastery Tests, efforts which may be commendable, but which are probably not carried over into other periods of time during a student's school career. Thus, even the lackluster performance of Hartford students on the Connecticut Mastery Tests may overstate the true performance of the school system and its students.

Figure 29 examines the percentage of all Hartford students taking the test scoring below the 23rd percentile by grade on the MAT in 1990-91. The pattern in this figure is consistent with that identified in Figures 25, 26, and 27. From the seventh through the tenth grades a greater proportion of Hartford students score below the 23rd percentile than might be expected.

Figure 29 – % of Students Scoring Below the 23rd Percentile by Grade on the MAT6 – 1990–91



*Source: Hartford Public Schools. (1991). Group Test Results - 1990-91. Hartford, CT., p. 18..

Any interpretation of the results of the Metropolitan Achievement Test for Hartford students must take into account three other factors: the restricted sample of students taking the test, the high proportions of Hartford students above age in grade, and the common finding that national norms on such tests enable all states and most districts using the test to claim that their students are above the national norms.

It is necessary to consider the restricted sample of students actually participating in the MAT test when interpreting the results of the test for Hartford students. The district reports on the testing program (Hartford Public Schools, 1991) does not provide information on the proportion of district students taking the test at each grade level.

However, the report does indicate the number of students taking the test at each grade level. By comparing the number of students in the fourth, sixth, and eighth grades listed as taking the test in the district report (Hartford Public Schools, 1991, p. 10) with the number of students deemed eligible to take the Connecticut Mastery Tests in 1990-91, it is possible to make a rough determination of the proportion of students participating in the MAT testing program. The State of Connecticut Department of Education (1991a, p. 103) reported that 1,823 Hartford fourth graders were eligible for the Connecticut Mastery Tests in 1990-91. The Hartford Public Schools (1991, p. 10) reported that 1192 fourth graders actually participated in the MAT tests given by the district. Thus, the number of fourth graders reported as taking the MAT test represents 65.4% of the number of fourth graders deemed eligible for testing by the Connecticut State Department of Education. Of course, differences in the size of the student population, particularly in a district such as Hartford with high mobility, mean that this is only a rough estimate. The corresponding figures for sixth grader students are 1589 eligible for testing (State of Connecticut, Department of Education, 1991b, p. 111) and 1171 taking the MAT (Hartford Public Schools, 1991, p. 10). The number of sixth graders reported as taking the MAT test represents 73.7% of the number of sixth graders deemed eligible for testing by the Connecticut State Department of Education. The figures for eighth graders are 1376 eligible for testing (State of Connecticut, Department of Education, 1991c, p. 110) and 1091 taking the MAT (Hartford Public Schools, 1991, p. 10. The number of eighth graders reported as taking the MAT test represent 79.3% of the number of eighth graders deemed eligible for testing by the Connecticut State Department of Education.

The MAT test results for Hartford students must also be interpreted in light of the considerable number of Hartford students who are above age for their grade level. A report prepared by the Hispanic Dropout Committee of the Hartford Public Schools (1991, p. 1)) indicates that "By 3rd grade...there are more students above age in grade, than students on age in grade. These proportions increase in the higher grades." Thus the low test scores of students at various grade levels in Hartford must be considered to be the scores of students who are more often than not older than they should be for their corresponding grade levels.

Finally, results on the MAT6 for Hartford students must be put into the broader context of the use of standardized tests and national norms by states and local education agencies. More specifically, since some have observed that all states and most school districts using standardized tests of student performance reach, for a variety of reasons, the implausible conclusion that their students perform above the national average (Cannell, 1988; Linn, Graue, & Sanders, 1990), the results for Hartford students most likely overstate their performance levels in relation to "national norms."

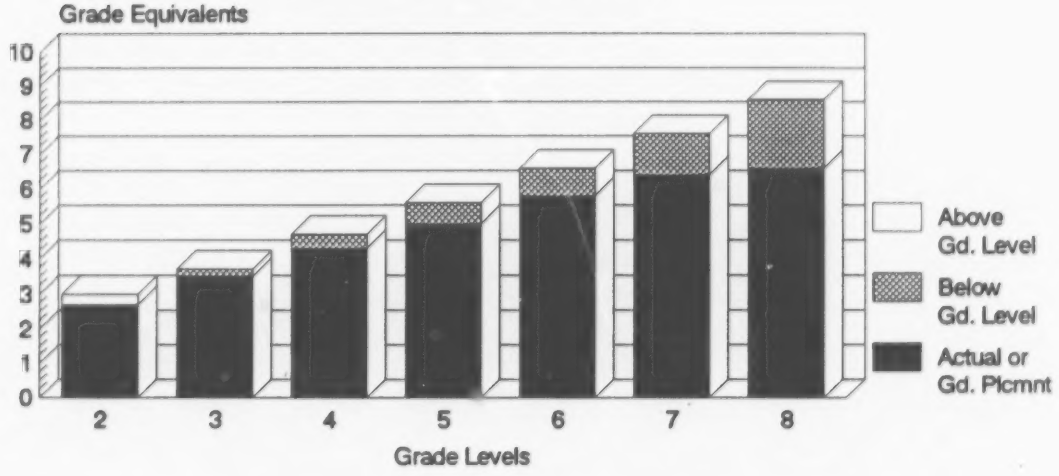
3. SABE

The Spanish Assessment of Basic Education (SABE) is administered to all Hartford students in grades 2 through 8 in the Spanish/English bilingual program. Figures 30 and 31 present the results for the 1989-90 school year for the SABE in reading and mathematics in grade equivalent scores, using the same format used in Figures 25, 26, and 27 for the MAT scores. Data for the 1989-90 school year is used because the report on the 1990-91 school year did not contain grade equivalent scores for the SABE (Hartford Public Schools, 1991). The test is administered during the seventh month of the school year in grades 2 through 4 and in the sixth month of the school year in grades 5 through 8 so the grade placements for students in grades 2 through 8 would be 2.7, 3.7, 4.7, 5.6, 6.6, 7.6, and 8.6.

Figure 30 presents the results for the mathematics test. As Figure 30 shows, at the second grade level the average grade equivalent score of Hartford students on the math section of the SABE exceeds the grade placement level by .3. For all other grade levels the performance of Hartford students on mathematics sections of the SABE is below the national average. From the third through the eighth grades the average grade equivalent scores of Hartford students fall below the grade placement levels by .2, .4, .6, .8, 1.2, and 2.0, respectively. Thus, there is a distinct tendency for students in the higher grades to be further behind the national averages in performance in mathematics.

Figure 30 - Hartford SABE Scores in Gd. Equivalents Relative to Gd. Placemnt

Mathematics 1989-1990



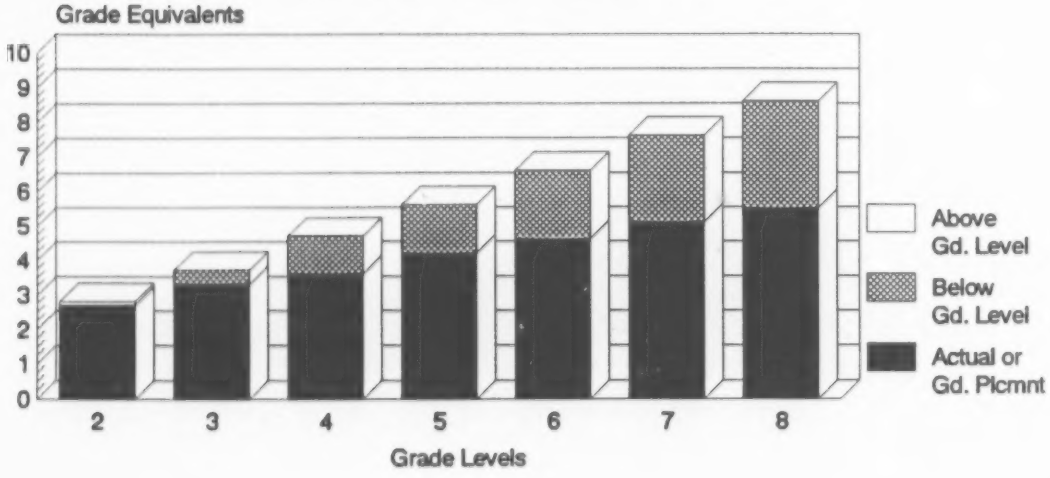
*Source: Hartford Public Schools. (1990). Group Test Results - 1989-91. Hartford, CT., p. 89.

Figure 31 presents the results for the reading test. Figure 31 indicates that at the second grade level the average grade equivalent score of Hartford students on the reading section of the SABE exceed the grade placement level by .1. At every other grade level the performance of Hartford students on the reading section of the SABE is below the national average. For the third through the eighth grades the average grade equivalent scores of Hartford students fall below the grade placement levels by .4, 1.1, 1.4, 2.0, 2.5, and 3.1, respectively. Thus, as with mathematics, there is a tendency

for students in the higher grades to be further behind the national averages in performance in reading.

Figure 31 - Hartford SABE Scores in Gd. Equivalents Relative to Gd. Placemnt

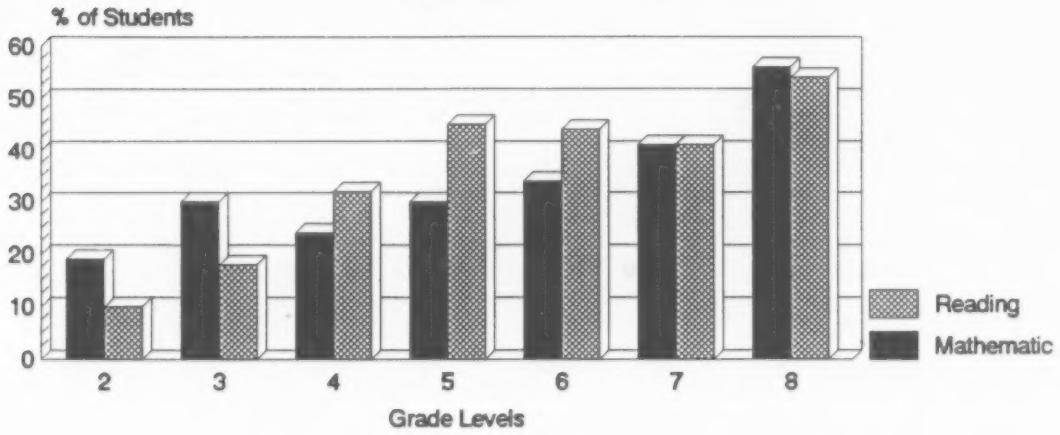
Reading - 1989-1990



*Source: Hartford Public Schools. (1990). Group Test Results - 1989-90. Hartford, CT., p. 89.

Figure 32 present the percentages of students scoring below the 23rd percentile by grade on the 1990-91 administration of the SABE. The pattern in this figure is consistent with the pattern for the 1989-90 data depicted in Figures 30 and 31. From the third through the eighth grades a greater proprtion of Hartford students scores below the 23rd percentile than might be expected.

Figure 32 – % of Students Scoring Below the 23rd Percentile by Grade on the Spanish Assessment of Basic Education 1990–91



*Source: Hartford Public Schools. (1991). Group Test Results - 1990-91. Hartford, CT., p. 99..

4. SAT

The Scholastic Aptitude Test (SAT) is a test of vocabulary, reading comprehension, numerical reasoning and problem solving. The 1991 Strategic School District Profile for Hartford (Connecticut State Department of Education, 1992) presents data on the performance of 1991 graduates of Hartford high schools on the mathematics and verbal sections of the SAT. The average score of Hartford graduates on the mathematic section of the SAT was 354, 109 points lower than the state average of 463. The range of scores for the middle 50% of the Hartford distribution was 290 to 400, compared to statewide figures of 370 to 550. The percent of Hartford students scoring 600 or above was 2.0% compared to the statewide average of 10.1%. Thus, mathematics performance of 1991 Hartford graduates lags substantially behind the performance of students statewide.

A similar pattern exists for performance on the verbal tests. The average performance of 1991 Hartford graduates on the verbal section of the SAT was 314, 108 points lower than the statewide average of 422. The range of scores for the middle 50% of the Hartford distribution was 240 to 370 compared to statewide figures of 340 to 500. The percent of Hartford student scoring 600 or above was .2% compared to the statewide average of 4.2%. Thus, the verbal performance of 1991 Hartford graduates lags substantially behind the performance of students statewide.

However, these substantial differences do not take into account the differences in the proportions of students in Hartford and statewide taking the SAT. In Hartford 56.7% of the 1991 graduates took the SAT. Statewide, the figure was 71.4%. It is likely that the lower participation rates for Hartford 1991 graduates mask even greater differences in test performance than those revealed here.

5. Graduation and Dropout Rates

Increasing the proportion of youngsters who complete their high school education has been a concern to educators and policy makers alike in the last ten years. Following a period in which relatively little attention was devoted to the problem of high school dropouts, growing numbers of researchers and policy makers have identified the dropout rate as a key indicator of the condition of U.S. education (McDill, Natriello & Pallas, 1985, Natriello, 1987).

National data indicate that 81.7% of the students who were sophomores in public schools in 1980 completed high school on time in June of 1982 (U.S. Department of Education, 1992). As reported by the Connecticut State Department of Education, "The proportion of local public ninth graders who complete high school four years later was 78.2% in 1988..." (State of Connecticut, Department of Education, 1989, p. vii).[7]

Figure 12 presents dropout rates for the Hartford public schools from several different sources. As Panel A of Figure 12 shows, in an undated memorandum to the Connecticut State Board of Education from Commissioner Tirozzi (Tirozzi, undated), the mean annual dropout rate (9-12) for students in the Hartford schools was listed as 7.7% in the 1987-88 school year, 9.2% in the 1988-89 school year, and 8.5% in the 1989-90 school year. These statistics suggest the loss of 30.8%, 36.8%, and 34% of the students in the Hartford High schools for these three periods.[8]

As Panel B reveals, the Guidance Department of the Hartford Public Schools (1989, 1990) calculated the annual dropout rate, i.e., the percentage of high school students who drop out in a given school year, as being 8.3% in the 1987-88 school year, 10.1% in the 1988-89 school year, and 9.4% in the 1989-90 school year.

As noted in Panel C of Figure 12, a pilot study of 957 (Larson, 1991) students from the three Hartford high schools who were ninth graders in September 1987 revealed dropout rates of 5.2%, 10.6%, 8.8%, and 1.0% for the four years during which the students were followed. As of October 1, 1991, 36.% of these students had graduated, 7.9% were still in school, 15.8% had dropped out, 25.9% had formally withdrawn, and the disposition of 13.9% was unknown.

Table 12 - Dropout Statistics for Hartford Public Schools

A. Mean Annual Dropout Rates (From Tirozzi, undated)

1987-88 - 7.7%

1988-89 - 9.2%

1989-90 - 7.7%

B. Annual Dropout Rate (From Guidance Dept., Hartford Public Schools)

1987-88 - 8.3%

1988-89 - 10.1%

1989-90 - 9.4%

C. Cohort Study - Dropout Rates and Status in 1991 (From Larson, 1991)

Ninth Graders in 1987

1987-88 - 5.2%

1988-89 - 10.6%

1989-90 - 8.8%

1990-91 - 1.0%

Status in October 1, 1991

Graduates - 36%

In School - 7.9%

Dropped Out - 15.8%

Withdrawn - 25.9%

Unknown - 13.9%

A study of 1962 students who were ninth graders for the first time in September 1988 found that 6.5% dropped out during the first year, and 8.2% dropped out during the second year. However, the disposition of 19.8% of these individuals was unknown as of October 1, 1991. If a significant portion of these unknowns had dropped out, it would raise the dropout rate by a substantial amount. It may be more revealing to consider that after two years only 47.3% of the students stayed in school and remained active during both years (Larson, 1991).

By whatever reporting method is used, the dropout rate for the Hartford Public Schools is substantially greater than for Connecticut public schools in general. Not only is dropping out an important indicator of school district performance, and one on which the Hartford Public Schools does not excell; it is also a factor to be considered when interpreting other performance data for the district since those students leaving prior to graduation are not included in many district performance measures.

6) Post-Secondary Education

In the modern U.S. economy education beyond high school is quickly becoming essential for success in the labor market. Thus one indicator of the success of the public schools is the proportions of students who succeed in entering post-secondary education. Nationally, 58.9% of 1988 high school graduates enrolled in college in the October following graduation, 59.6% of the 1989 high school graduates enrolled in college in the October following graduation, and 60.1% of the 1990 high school graduates enrolled in college in the October following graduation (U.S. Department of Education, 1992, p. 28).

The State of Connecticut Department of Education (1989, p. 7) reported that 71.9% of 1988 Connecticut public high school graduates were continuing their education in October after graduation.[9] The Department also reported that 52.3% of 1988 Connecticut public high school graduates were attending four-year colleges in the October after graduation (State of Connecticut Department of Education, 1989, p. 14). Of the 1988 graduates of the Hartford Public Schools, only 57% were pursuing further education, and only 29.6% had entered four-year colleges in the October following graduation. Thus, the post-graduation activities of 1988 graduates of the Hartford Public Schools show that they were substantially less likely than Connecticut public high school graduates overall to a) pursue further education and b) enter four year colleges.

The Strategic School District Profile for Hartford (Connecticut State Department of Education, 1992) reported on the activities of 1991 graduates. Although a slightly smaller percentage of Hartford 1991 graduates (68.4%) than graduates statewide (72.5%) continued their education, the difference became particularly apparent in the case of attending a four-year college where only 31.0% of Hartford graduates attended, but 51.0% of graduates statewide attended. Hartford graduates were more likely (29.6%) than graduates statewide (16.3%) to attend a two-year college, and Hartford graduates were more likely (7.8%) than graduates statewide (5.1%) to be engaged in other education.

Hartford 1991 graduates were slightly more likely (4.3%) than graduates statewide (3.2%) to be in the military. They were also less likely (14.8%) than gradautes statewide (17.3%) to be in civilian employment. The unemployed proportion

of the Hartford 1991 graduating class was one and three-quarters more likely to be unemployed (4.6%) than graduates statewide (2.6%). Hartford graduates were also more likely (7.8%) than graduates statewide (4.5%) to be engaged in something other than education and work.

Section III
Interdistrict Comparisons

This section focuses on the position of the Hartford Public Schools in comparison with schools in adjacent and contiguous communities. Following the organization of material established in Sections I and II, this section first presents material on community resources and then on school resources and outcomes. Within each of these broad categories, comparisons are made with the twenty-two comparison districts in the adjacent and contiguous communities and/or with three districts, Farmington, Glastonbury, and West Hartford, selected for more in-depth analysis.

A. Community Conditions and Resources

The community conditions and resources for Hartford have been described previously. Table 12 provides an overview of those community indicators that are available for the three comparison towns of Farmington, Glastonbury, and West Hartford. Indicators are available for economic status, family composition, educational attainment, minority racial or ethnic status, language minority status, and parent labor force participation. In all cases the incidence of these disadvantaging characteristics for Hartford is at least double that for the three comparison towns. In many cases the incidence of an indicator of disadvantage in Hartford is three or more times as great as in the three surrounding towns.

The impact of the community characteristics on the schools of the respective towns is most easily understood by considering the incidence with which each characteristic is likely to manifest itself in a typical classroom in each community. The number of students with each of these characteristics in a typical class has been calculated by taking the product of the rate of the characteristic in each community and average size of a fifth grade class in each community. Thus in terms of one of the indicators of poverty status the average Hartford classroom will have 8.5 students receiving free or reduced price meals, the average Farmington class will have .8 such students, the average Glastonbury class will have 1 such student, and the average West Hartford class will have 2.5 such students. Although all of the indicators show substantial differences between classrooms in Hartford and those in the three surrounding communities, perhaps the most striking contrast concerns the indicator for parent labor force participation. In the average Hartford classroom 9.4 students will be living in a home in which no parents are participating in the labor force. In the other three communities, the average number of such students in a typical classroom will be less than 1.

Table 13
The Rate of Incidence of Indicators of Disadvantage Among the Populations of Hartford, Farmington, Glastonbury, and West Hartford and the Average Number of Students Manifesting the Indicator in a Typical Classroom in Each Community
Rate (N in Class)

	Hartford	Farm--inton	Glaston--bury	West Hartford
Avg. 5th Grade Class Size***	23.4	20.8	21.7	25.7
Indicator				
A. Economic Status				
Families With Children Under 18 Below Poverty Level*/Students receiving Free/Reduced Price Meals***	36.3%/63.3% (8.5/14.8)	1.6%/4.0% (.3/.8)	2.2%/4.7% (.5/1.0)	3.4%/9.8% (.9/2.5)
B. Family Composition				
Single Parent Households*	64.7% (15.1)	14.1% (2.9%)	14.2% (3.1)	20.43 (5.2)
C. Parent Educational Attainment				
Less than High School Education*	40.6% (9.5)	11.1% (2.3)	9.4% (2.0)	12.7% (3.3)
D. Minority Status (Students)				
Minority Group Member***	92.1% (21.6)	6.0% (1.3)	7.4% (1.6)	14.5% (3.7)
E. Limited English Proficiency				
Home in Which A Language Other Than English is Spoken*/ Percentage of Non-English Home Language Students***	19.8%/51.3% (4.6/12.0)	6.0%/6.8% (1.3/1.4)	2.1%/3.7% (.5/1.8)	6.6%/13.1% (1.7/3.4)
F. Parent Labor Force Participation				
Living With Parent(s) With No Labor Force Participation*	40.0% (9.4)	0.8% (.2)	2.2% (.5)	2.6% (.7)

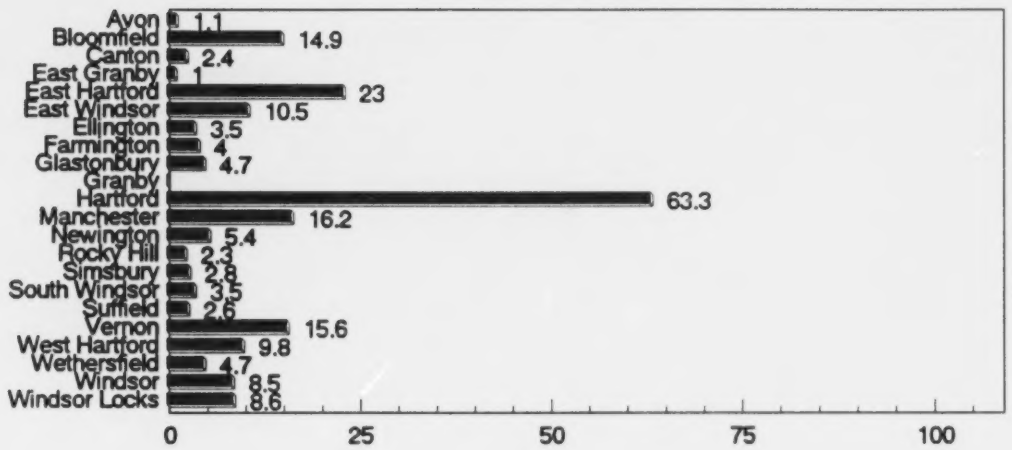
*Source: U.S. Department of Commerce, Bureau of the Census, 1992.
**Source: U.S. Department of Commerce, Bureau of the Census, 1991.
***Connecticut State Department of Education, 1992h, 1992i, 1992k, 1992s.

The strategic school district profiles prepared by the Connecticut State Department of Education provide some additional indicators of disadvantage for the community and students in Hartford and the 21 surrounding communities (Connecticut State Department of Education, 1992a-v). Figure 33 presents the percentage of students receiving free or reduced price meals in these 22 districts during the 1991-92 school year. The Hartford free and reduced price lunch percentage of 63.3% is over twice that of the second highest percentage of 23% in East Hartford, at least three times the size of the third highest percentage of 16.2% in Manchester, and at least four times the size of the percentage in any other district. Thus the rate of poverty among students in Hartford is quite substantially greater than the rate among students in any of the other 21 districts.

Figure 33 – Percentage of Students Receiving Free/Reduced Price Meals

1991 – 1992

Hartford and Surrounding Districts



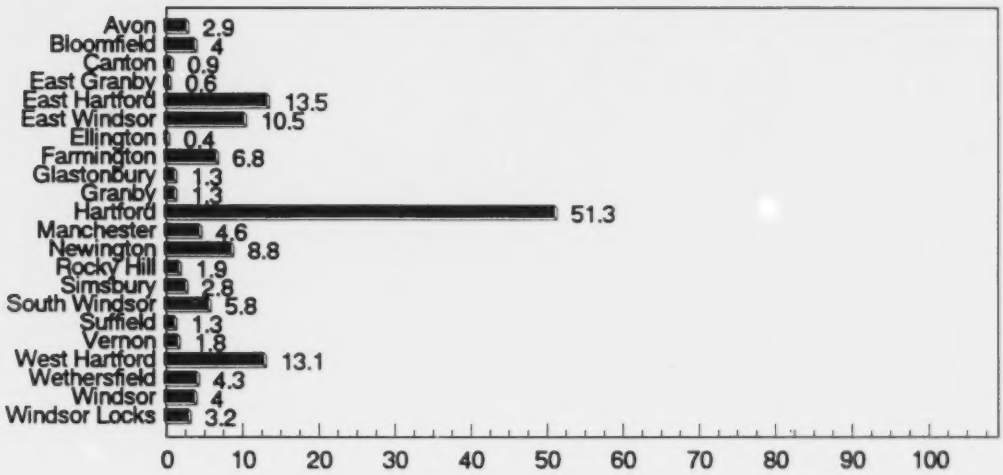
*Source: Connecticut State Department of Education, 1992a-v.

Figure 34 presents the percentage of Non-English Home Language Students in Hartford and the 21 surrounding districts for 1991-92. The Hartford Non-English Home Language percentage of 51.3% is over three times the size of the percentage in

the communities with the second and third highest percentages, East Hartford with 13.5% and West Hartford with 13.1%. Moreover, the Hartford percentage is at least four times the size of the percentages of the other communities. Thus, the percentage of Non-English Home Language students is substantially greater in Hartford than in the surrounding communities.

Figure 34 - Percentage of Non-English Home Language Students - 1991 - 1992

Hartford & Surrounding Districts

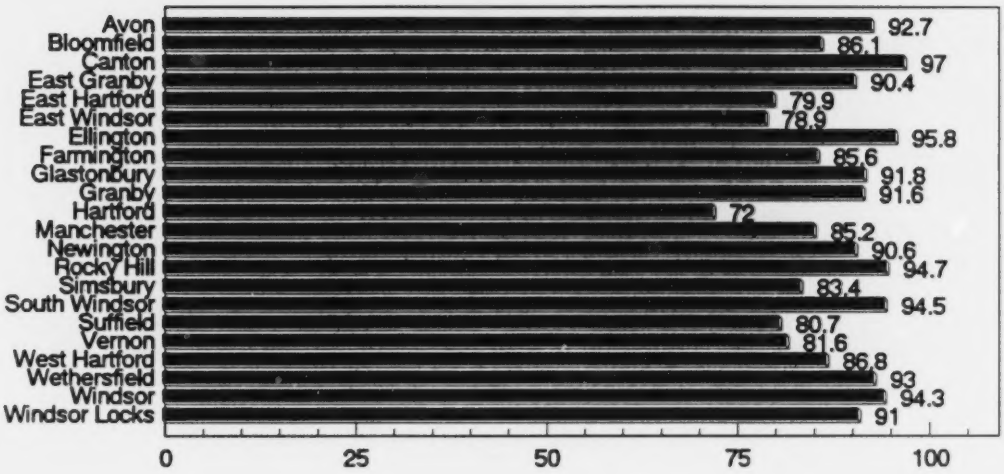


*Source: Connecticut State Department of Education, 1992a-v.

Figure 35 presents data on an indicator of the stability of the student population. It shows the percentage of returning elementary students for the 1991-92 school year. "It represents that percentage of students who have attended a particular school for at least one year." (Connecticut State Department of Education, June 1992). Hartford, with 72% of elementary students returning, has the fewest elementary students who have attended a particular school for at least one year. The district with the next lowest stability is East Windsor with 78.9% of the elementary students returning. Thus, Hartford has the least stable elementary student population of any of the twenty-two districts in the region.

Figure 35 – Percentage of Returning Elementary Students – 1991 – 1992

Hartford & Surrounding Districts



*Source: Connecticut State Department of Education, 1992a-v.

B. Resources for the Educational Enterprise

1. Comparisons with K-12 Districts Statewide

The State of Connecticut Department of Education (1992) has reported on the expenditures of districts throughout the state. Their 1992 report on expenditures for the 1990-91 school year presents data on net current expenditures (NCE) of districts as

> defined in Connecticut General Statutes Section 10-26(a)(5). NCE includes all current public elementary and secondary expenditures from all sources, excluding reimbursable transportation. (State of Connecticut, Department of Education, 1992, p. 17).

The report also presents data on the net current expenditures per pupil which "represents NCE divided by ADM as defined in Connecticut General Statutes Section 10-26(a)(4,5)."

For 1990-91 Hartford's net current expenditure per pupil was $7,748 which placed it twentieth in the state in terms of such expenditures.

The State of Connecticut Department of Education report (1992) also uses the concept of Need Students defined as:

> The sum of (a) Resident Students in Regular Program, (b) one-quarter of the number of children who received AFDC benefits for the prior year, and (c) one-quarter of the mastery count as defined in Connecticut General Statutes Section 10-262(f). This excludes pupils receiving special education instruction and services for 50 percent or more of their instructional time. (State of Connecticut, Department of Education, 1991, p. 17).

Dividing net current expenditures by the number of need students in Hartford results in a net current expenditure per need student figure of $6,728.42 and places Hartford in the sixty-ninth position among Connecticut districts.

The State of Connecticut Department of Education report (1992) also utilizes the concept of Regular Program Expenditures (RPE) which are

> ...calculated as defined in Connecticut General Statutes Section 10-262(f). This figure differs from NCE in that is excludes most grants, with the exception of state ECS and federal Impact Aid, as well as reimbursable special education expenditures. (State of Connecticut Department of Education, 1992, p. 17).

Using regular program expenditures and need students, the Department of Education calculates the regular program expenditures per need students for Hartford as $4,829 with a rank of one-hundred and thirty-third among Connecticut districts.

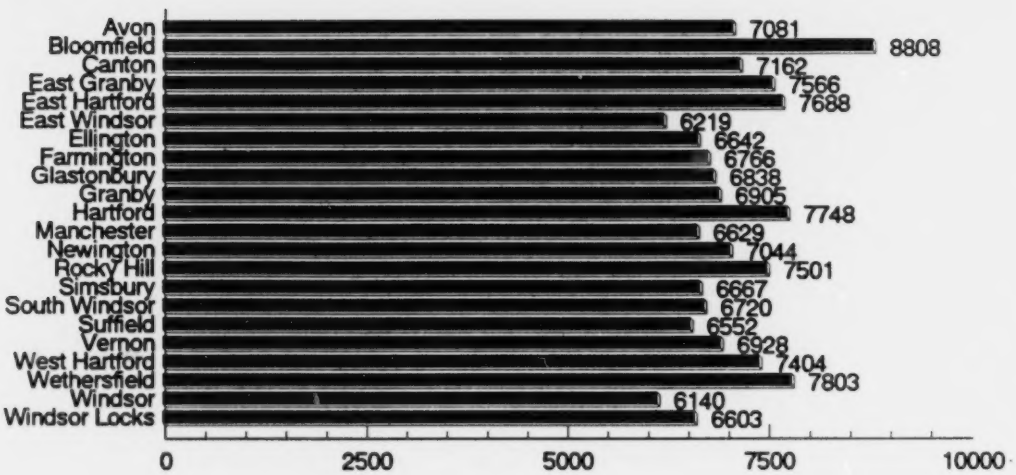
What these different figures point out is that the expenditures of the Hartford district appear quite substantial when one does not consider the needs of the students in the district and when one does consider the special grant funds made available to the district. As the needs of students enter the picture and the special grant funds are factored out, the regular program expenditures per need students place Hartford near the bottom of the ranks of districts statewide. Moreover, since the calculation of need students is based on an arbitrary formula which counts each student receiving AFDC as 1.25 students and each student testing below the remedial standards as 1.25, the degree to which this formula underestimates the actual costs associated with educating such students will disadvantage the Hartford district. For example, if the formula was set to 1.40 for each AFDC students and 1.40 for the mastery count, then Hartford's regular program expenditures per need student would decline even further in both absolute and relative terms. Any error in estimating the formula is magnified in a district such as Hartford with large numbers of students in need.

2. Comparisons with Contiguous and Adjacent Communities

Figures 36, 37, and 38 present data on these expenditures for the twenty-two districts in the Hartford region. Figure 36 presents the net current expenditures per pupil for 1990-91 for the twenty-two districts in the Hartford region. Hartford with net current expenditures per pupil of $7748 ranks third among these districts. Only Bloomfield ($8808) and Wethersfield ($7803) have higher net current expenditures per pupil.

Figure 36 – Net Current Expenditures Per Pupil – 1990–91

Hartford & Surrounding Districts

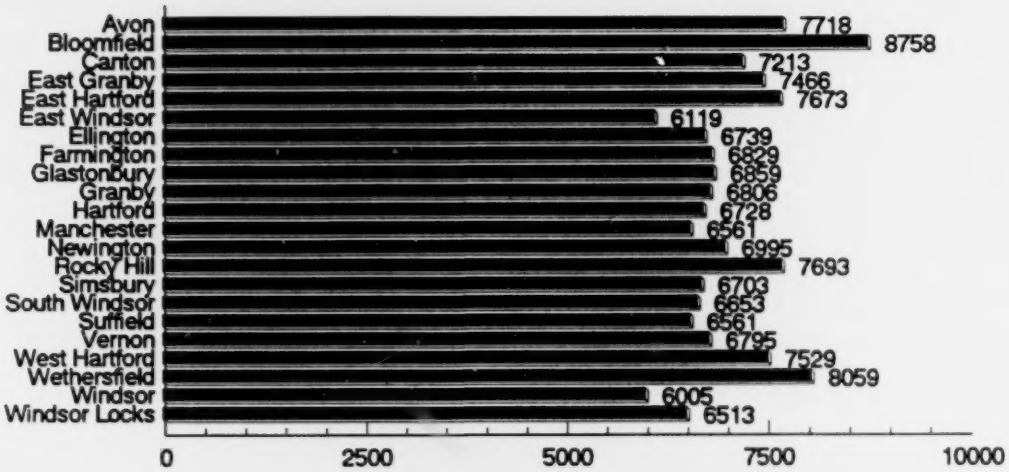


*Source: State of Connecticut Department of Education, 1992, pp. 18-22, column 13.)

Figure 37 presents data on the net current expenditures per need student for the twenty-two districts in the Hartford region. Hartford with net current expenditures per need student of $6728 ranks 15th among the districts on this measure. The range goes from Bloomfield with a high of $8758 to Windsor with a low of $6005.

Figure 37 – Net Current Expenditures Per Need Student – 1990–91

Hartford & Surrounding Districts

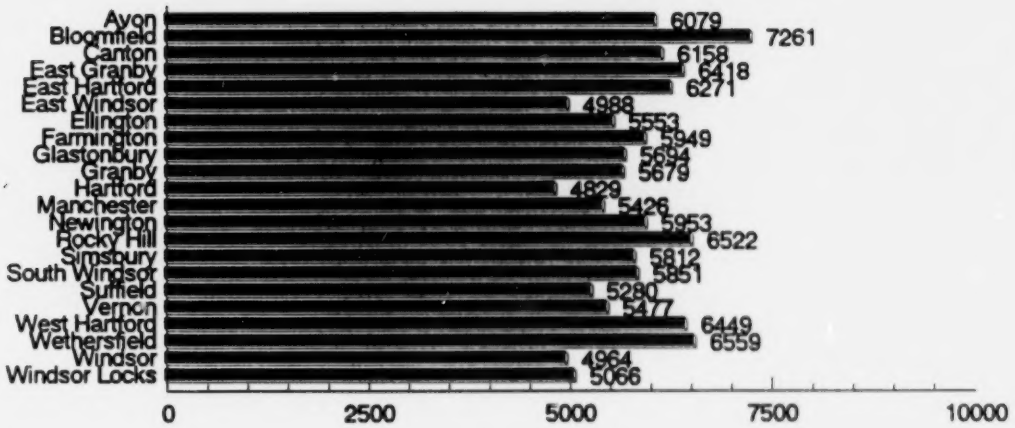


*Source: State of Connecticut Department of Education, 1992, pp. 18-22, column 11 divided by column 16.)

Figure 38 shows the regular expenditures per need student in 1990-91 for the twenty two districts in the Hartford region. Hartford with regular program expenditures per need student of $4829 ranks at the bottom of the twenty-two districts. Bloomfield with regular program expenditures per need student of $7261 ranks first among the districts in the region.

Figure 38 – Regular Program Expenditures Per Need Student – 1990–91

Hartford & Surrounding Districts



*Source: State of Connecticut Department of Education, 1992, pp. 18-22, column 17.)

Taken together Figures 36, 37, and 38 reinforce the finding expressed earlier that the Hartford expenditures, while appearing above average at first look, are relatively poor once student needs and special grant funds are taken into account. The particularly low position of Hartford in terms of regular program expenditures per need student portrayed in Figure 38 suggests that Hartford students outside of the special programs, are at a disadvantage in terms of educational resources.

More fine-grained comparisons between the resources of the Hartford Public Schools and those of public schools in contiguous and adjacent communities are organized in terms of the expenditure categories used by the Connecticut State Department of Education and reported in their annual reports on Connecticut Public School Expenditures (State of Connecticut Department of Education, 1990d, 1991d, 1992d). Table 12 presents data on expenditures in various standard categories for Hartford, Farmington, Glastonbury, West Hartford as well as the average costs for the twenty-two districts in the Hartford region and all k-12 districts in Connecticut. Once

again, all expenditure data reported here are derived by averaging the district expenditures as reported in the state reports for the three years: 88-89, 89-90, 90-91, to provide a set of more stable indicators of district resources.

Table 14
Per Pupil Expenditures of the Hartford Public Schools, Farmington, Glastonbury, West Hartford, Twenty-two Communities in the Region, and the Overall State Average for 1988-89, 1989-90, 1990-91[10]

	Hartford Hartford	Farm-ington	Glaston-bury	West Hartford	22 Districts	K-12 State Average
Certified Staff	$4232	$3657	$3721	$4480	$3910	$3822
Non-Certified Staff	$1051	$835	$912	$873	$778	$754
Benefits	$967	$714	$634	$668	$692	$714
Pupil & Instructional Services	$39	$174	$76	$76	$101	$100
Textbooks & Inst. Supplies	$78	$157	$175	$144	$159	$148
Library Books & Periodicals	$5	$38	$14	$23	$18	$15
Equipment	$25	$110	$115	$109	$97	$91
Tuition	$16,596	$22,024	$24,205	$21,745	$19,014	$18,929
Plant Operations	$162	$300	$201	$206	$272	$266
Transportation	$809	$379	$255	$386	$378	$396
Purchased Services	$142	$172	$107	$171	$138	$117

*Source: State of Connecticut, Department of Education, 1990d, 1991d, 1992d.

3. Staffing

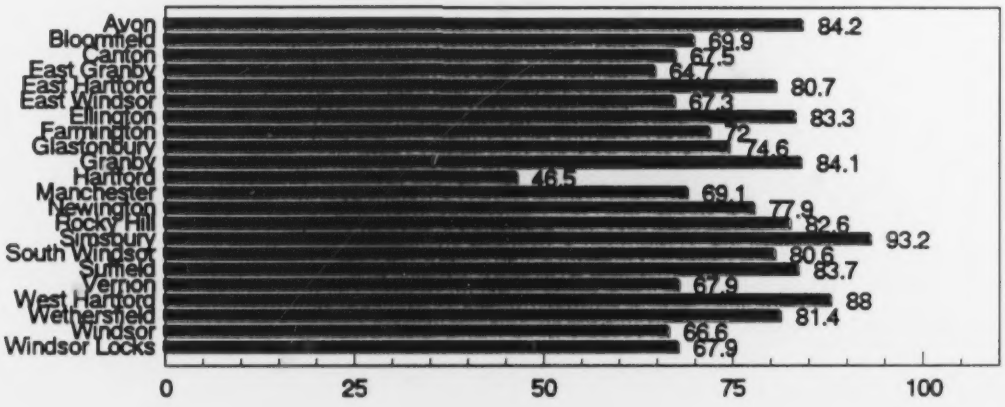
As Table 12 clearly indicates, the expenditures in Hartford for the three staffing categories, certified staff, non-certified staff, and benefits are higher than the average for k-12 districts statewide and the average for the twenty-two districts in the Hartford region. They are also higher than those in Farmington, Glastonbury, and West Hartford. Such greater costs may be attributable to a higher quality of staff, to a greater quantity of staff, or to higher costs associated with attracting and retaining staff.

Quality. The Strategic School District Profiles (Connecticut State Department of Education, 1992a-v) provide two indicators of staff quality, the percentage of professional staff with a masters degree or greater, and the percentage of staff trained as mentors, assessors, or cooperating teachers. Figure 39 presents data on the percentage of staff with a masters degree or greater in Hartford and the twenty-one other districts in the region. Hartford with only 46.1% of staff with a masters degree ranks last among the twenty-two districts in the region. The district with the next lowest percentage of staff with a masters degree is East Granby where 64.7% of the staff have a masters degree. Thus, all of the twenty-one other districts in the region have substantially higher percentages of staff with masters degrees.

Figure 39 – Percentage of Professional Staff with A Masters Degree or Greater

1991-92

Hartford and Surrounding Districts

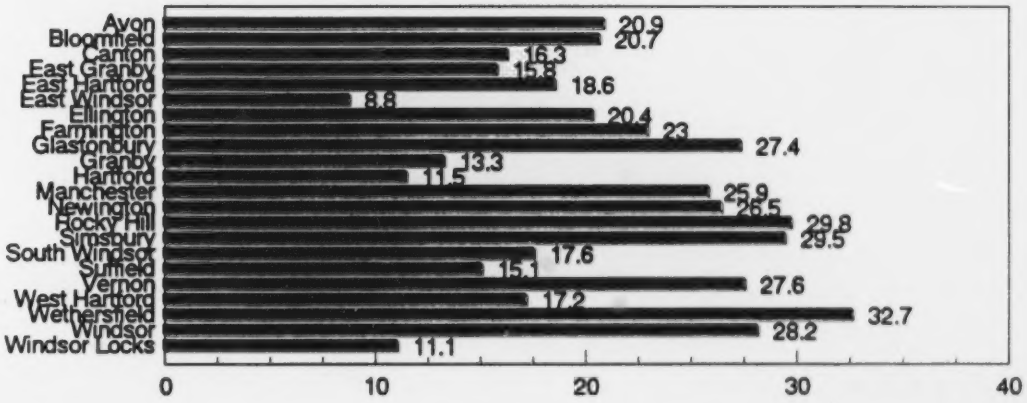


*Source: Connecticut State Department of Education, 1992a-v.

Figure 40 presents the percentage of professional staff trained as mentors, assessors or cooperating teachers in the twenty-two districts in the Hartford region. These represent individuals who have completed the Connecticut State Department of Education training. In Hartford 11.1% of the staff have completed such training. Hartford ranks twentieth among the districts in the region with only Windsor Locks (11.1%) and East Windsor (8.8%) having lower percentages of staff with such training. Thus, Hartford teachers lag behind those in most of the other districts in the region in terms of such training.

Figure 40 – Percentage of Professional Staff Trained as Mentors, Assessors, or

Cooperating Teachers – 1991–92
Hartford and Surrounding Districts



*Source: Connecticut State Department of Education, 1992a-v.

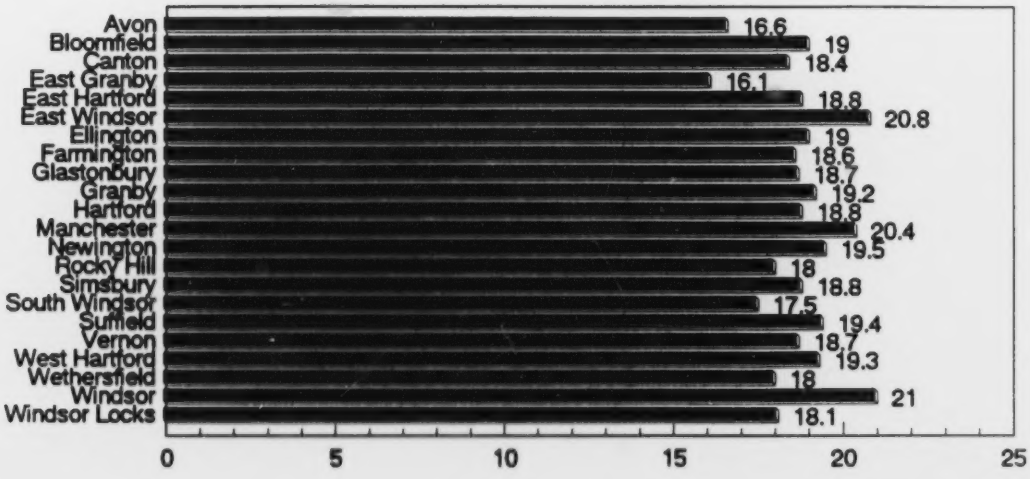
The data in Figures 39 and 40 suggest that the higher staffing expenditures in Hartford are not the result of a higher quality staff.

Quantity. The higher costs of staffing for the Hartford Public Schools relative to other districts in the region do not result from a greater quantity of staff per student. Figures 41 through 45 present data from the Strategic School District Profiles (Connecticut State Department of Education, 1992a-v) on the ratios of students to various school staff. Figure 41 displays the number of students per classroom teacher for Hartford and the other districts in the region. Hartford, with a ratio of 18.8 students per classroom teacher has a lower ratio than nine districts, and a higher ratio than 10 districts. Two districts have the same ratio as Hartford. Thus, Hartford does not have a particularly low ratio of students to teachers. If the higher staff expenditures in Hartford were the result of a greater quantity of staff, Hartford would have a lower ration of students to staff that available data indicate. Thus, the higher staff

expenditures in Hartford are not the result of having more staff per student than other districts.

Figure 41 - Number of Students Per Classroom Teacher - 1991 - 1992

Hartford & Surrounding Districts

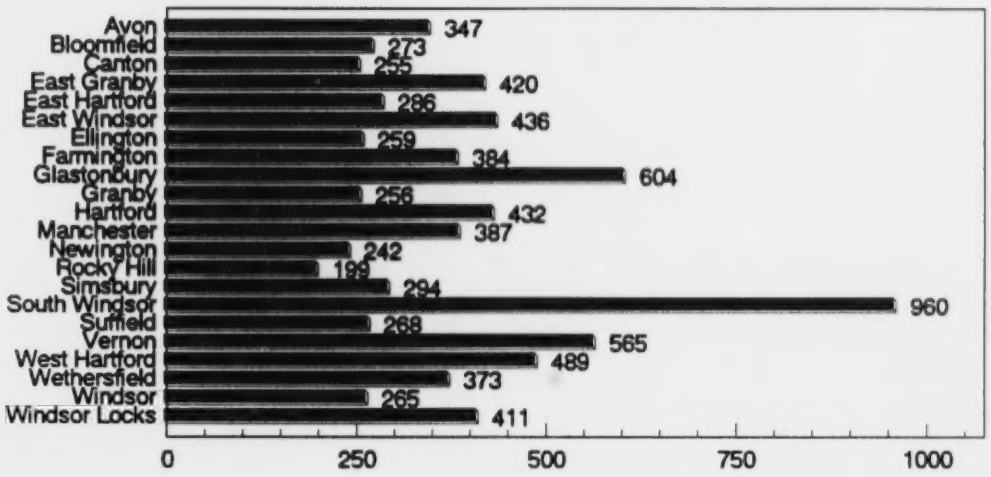


*Source: Connecticut State Department of Education, 1992a-v.

Figure 42 reports the number of students per instructional specialist in Hartford and the surrounding districts. Hartford, with a ratio of 432 students per specialist, has a less favorable ratio than sixteen other districts in the region. Thus, Hartford does not have a low ratio of students to instructional specialist.

Figure 42 – Number of Students Per Instructional Specialist – 1991 – 1992

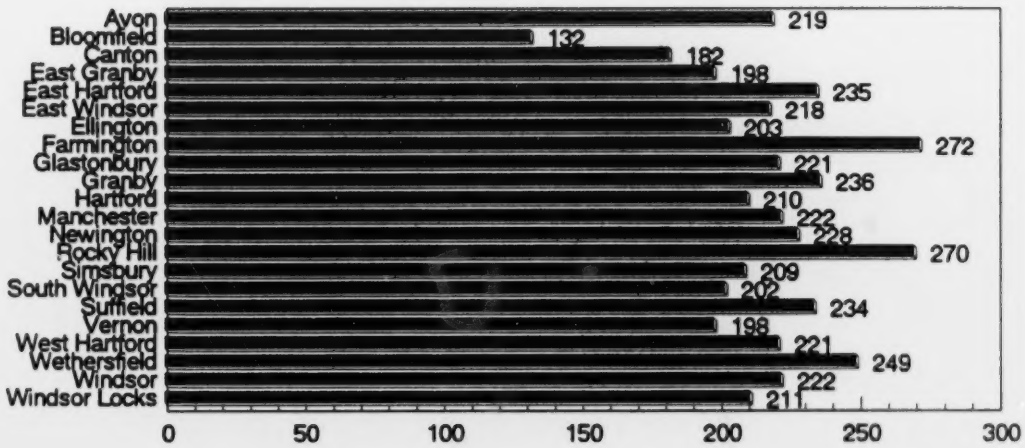
Hartford & Surrounding Districts



*Source: Connecticut State Department of Education, 1992a-v.

Figure 43 reports on the number of students per counselor, social worker, and school psychologist in Hartford and the surrounding districts. Hartford, with a ratio of 210 students per counselor, social worker, and school psychologist, has a less favorable ratio than seven other districts in the region. Thus, Hartford does not have a particularly low ratio of students per counselor, social worker, and school psychologist. Moreover, because large numbers of Hartford students exhibit characteristics which place them at-risk, this ratio is particularly problemmatic.

Figure 43 – Number of Students Per Counselor, Social Worker and School Psychologist – 1991 – 1992 Hartford and Surrounding Districts

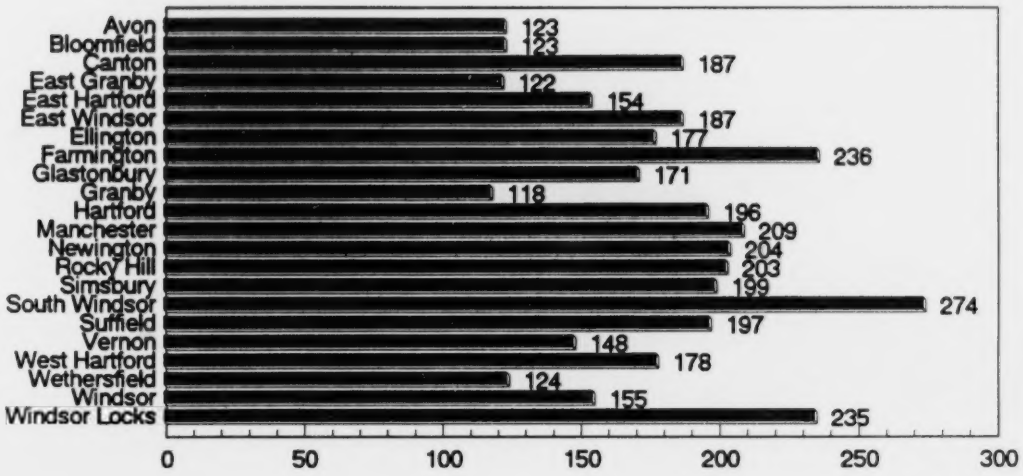


*Source: Connecticut State Department of Education, 1992a-v.

Figure 44 presents data on the number of students per certified administrator in Hartford and other districts in the region. Hartford, with a ratio of 196 students per FTE administrator, has a less favorable ratio than thirteen other districts in the region. Thus, Hartford does not have a low ratio of students per FTE administrator.

Figure 44 - Number of Students Per Cert. FTE Administrator - 1991 - 1992

Hartford & Surrounding Districts

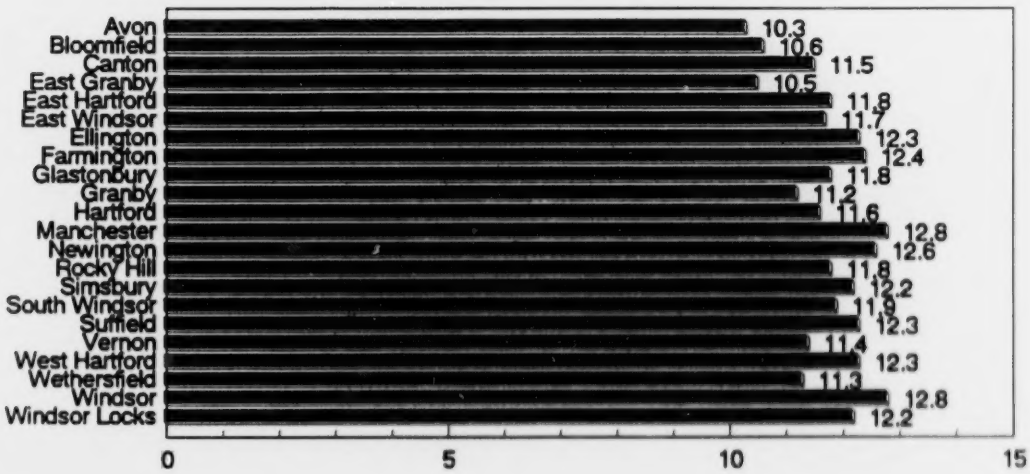


*Source: Connecticut State Department of Education, 1992a-v.

Figure 45 present data on the number of students per certified FTE staff in Hartford and surrounding districts. Hartford, with a ratio of 11.6 students per certified FTE staff member, has a less favorable ratio of students to staff than seven other districts in the region. Thus, Hartford does not have a particularly low ratio of students per certified FTE staff.

Figure 45 – Number of Students Per Cert. FTE Staff – 1991 – 1992

Hartford & Surrounding Districts



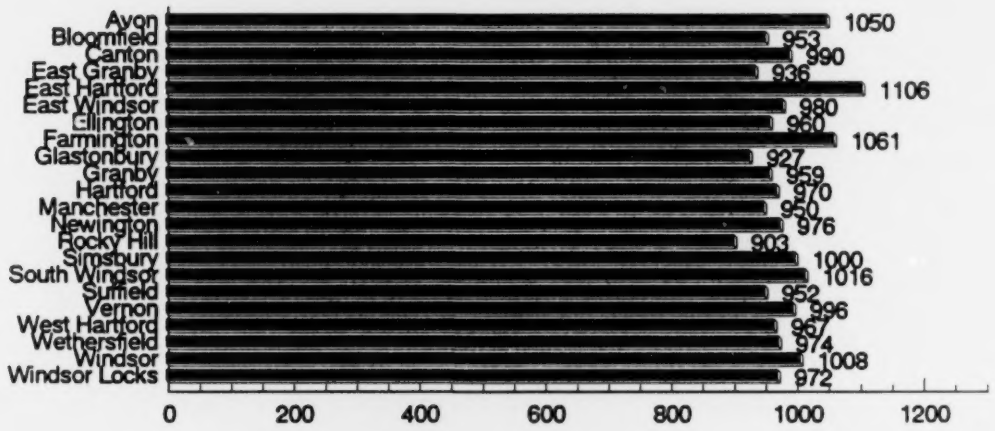
*Source: Connecticut State Department of Education, 1992a-v.

The relatively high staffing costs in the Hartford district are not explained by the quantity of instruction provided to students. Figures 46 through 48 present the hours of scheduled instruction per year for Hartford and other districts in the region. These data are drawn from the Strategic School District Profiles (Connecticut State Department of Education, 1992a-v).

Figure 46 reports on the hours of scheduled instruction at the elementary level in Hartford and the other districts in the region. At the elementary level, Hartford, with 970 hours of scheduled instruction, has fewer hours of instruction than twelve other districts in the region. Thus, elementary students do not receive a particularly high number of instructional hours.

Figure 46 – Hours of Instruction Per Year – Elementary School Level

Hartford & Surrounding Districts

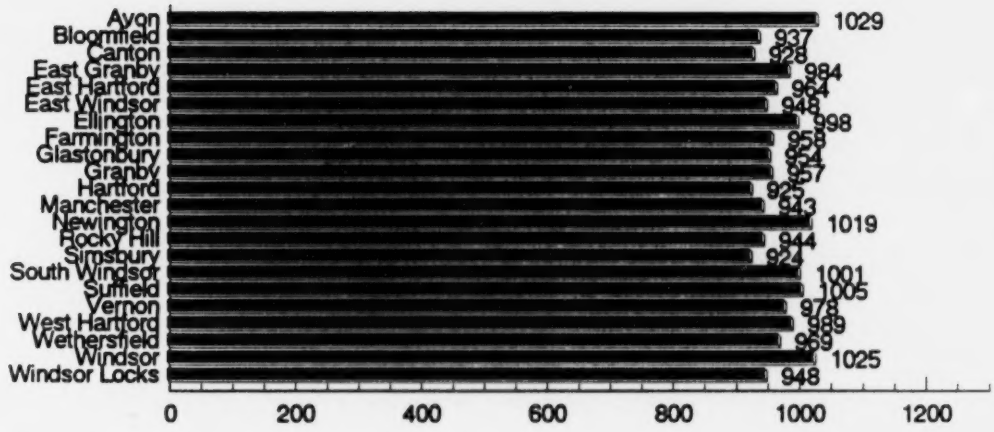


*Source: Connecticut State Department of Education, 1992a-v.

Figure 47 reports on the hours of scheduled instruction at the middle school level in Hartford and the other districts in the region. Hartford, with 925 hours of scheduled instuction per year at the middle school level, offers fewer hours of instruction than twenty of twenty-one other districts in the region. For example, two districts, Avon and Windsor, offer at least 100 more hours of instruction or nearly 11% more instructional time than Hartford. Thus, number of hours of scheduled instuction in Hartford at the middle school level is relatively low.

Figure 47 – Hours of Instruction Per Year – Middle School Level

Hartford & Surrounding Districts

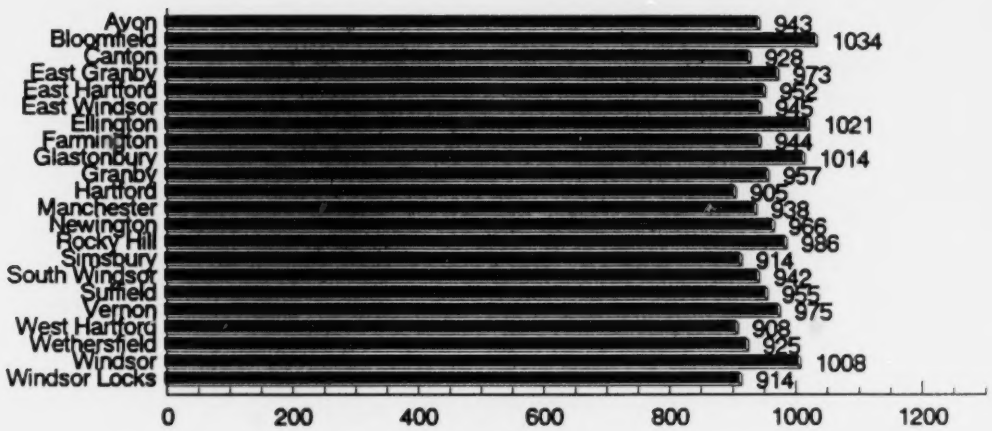


*Source: Connecticut State Department of Education, 1992a-v.

Figure 48 reports on the hours of scheduled instruction at the high school level in Hartford and the other districts. With 905 hours of scheduled instruction, Hartford offers fewer hours of instruction at the high school level than any of the other twenty-one districts in the region. Four districts, Bloomfield, Ellington, Glastonbury, and Windsor, offer at least 100 hours of instruction, or over 11% more instructional time than Hartford. Thus, the number of hours of scheduled instruction in Hartford at the high school level is relatively low.

Figure 48 – Hours of Instruction Per Year – High School Level

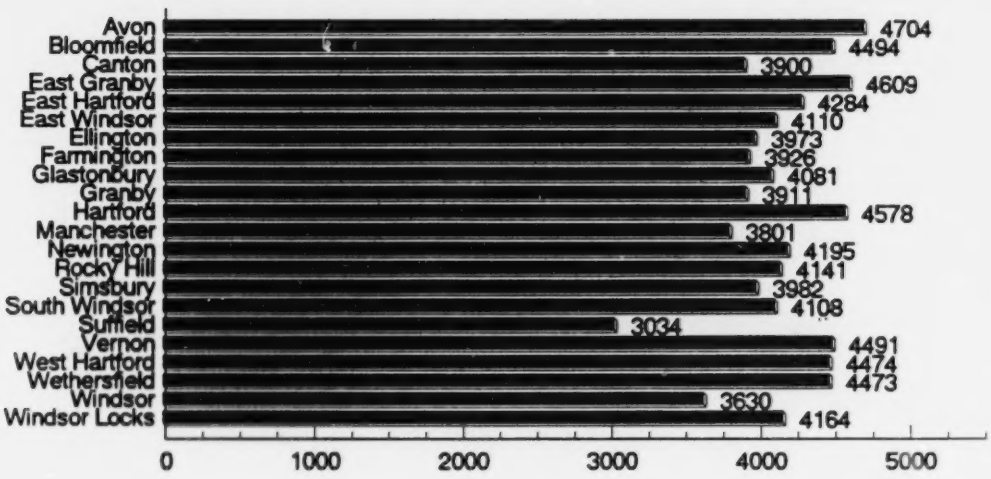
Hartford & Surrounding Districts



*Source: Connecticut State Department of Education, 1992a-v.

Costs. The primary reason for the higher than average staff expenditures for the Hartford Public Schools is the actual costs of hiring and retaining staff. Figure 49 presents the staff cost per pupil for Hartford and the other districts in the region (Connecticut State Department of Education, Division of Research, Evaluation, and Assessment, 1992). Hartford, with average per pupil costs of $4,578 in 1991-92 spent more than 19 of the other twenty-two districts in the region on staff per pupil. Only Avon and East Granby had higher per pupil staff costs. For the three years corresponding to the data on Table 12, Hartford spent more per pupil on staff than 18, 18, and 16 of the other districts, respectively. Thus, the actual costs of staffing the Hartford Public Schools tend to be higher than those in other districts.

Figure 49 – Staff Cost Per Pupil
1991–92
Hartford and Surrounding Districts



*Source: Connecticut State Department of Education, Division of Research, Evaluation and Assessment, 1992.

4. Pupil and Instructional Services

The expenditures for Pupil and Instructional Services, those "expenditures for personnel services that are purchases and not part of the district payroll, such as teaching assistants, curriculum consultants, in-service training specialists, medical doctors, therapists, audiologists, neurologists, psychologists, psychiatrists, etc (Lines 28, 202, and 220" (State of Connecticut Department of Education, 1992d, p. 5), are markedly lower in Hartford than in the other districts in the region. As Table 12 reveals, Hartford, with average annual expenditures of $39 per pupil over the three year period from 1988-89 through 1990-91, spent less than 40% of the average district in the region, just over half of the expenditures of Glastonbury and West Hartford, and less than one-fourth of the expenditures of Farmington. Although some of this apparent disadvantage may be due to the provision of services by personnel who are on the district payroll, the student to staff ratios reported above mean that Hartford

students are not receiving considerably more services in-house than students in other districts in the region.

5. Textbooks and Instructional Supplies

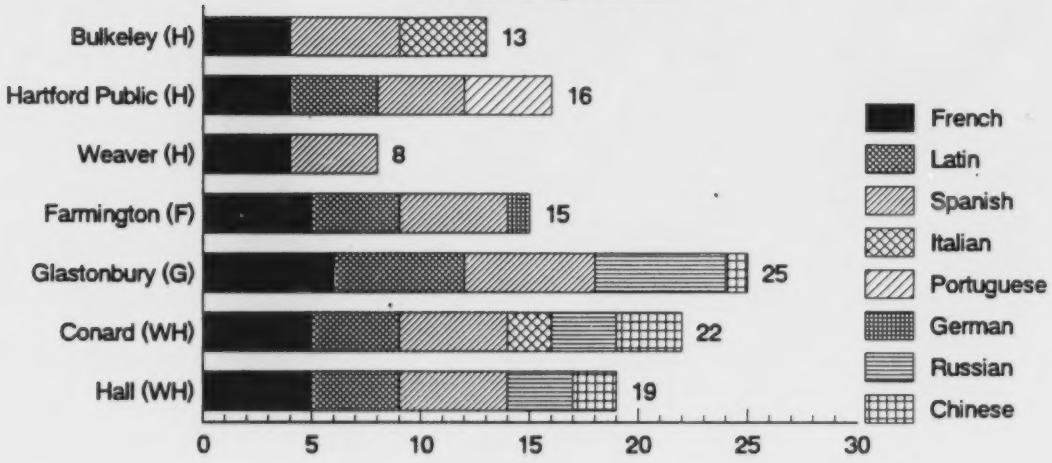
Over the three years from 1988-89 through 1990-91 the Hartford Public Schools spent an average of $78 per pupil on textbooks and instructional supplies, those instructional materials that are of an expendable nature. This is about one-half of the average amount spent by the twenty-two districts in the region over this same period of time. The three comparison districts, Farmington, Glastonbury, and West Hartford spent $157, $175, and $144 per pupil for textbooks and instructional materials over this same time period.

The impact of such limited spending for texts and supplies takes many forms, but clearly, if the twenty-two district average of $101 is taken as a reasonable expenditure level, Hartford falls substantially below it. It is likely to have a constraining effect on the program of the school and result in practices such as the more limited instructional time at the middle and high schools and the more limited exposure of students to certain courses discussed earlier in comparisons between Hartford and the statewide averages and that will be discussed shortly in comparisons related to outcomes between Hartford and the three comparison districts.

Figure 50 provides additional information on one part of the curriculum at the high schools in Hartford and the three comparison districts of Farmington, Glastonbury, and West. Hartford drawn from the Strategic School Profiles (Connecticut State Department of Education, 1992w-dddd). Figure 50 shows the total years of foreign language instruction offered by the seven high schools in these three districts. Hartford's three high schools, Bulkeley, Hartford Public, and Weaver, offer 13, 16, and 8 years of foreign language instruction, respectively. Bulkeley and Weaver offer fewer years of foreign language instruction than any of the high schools in the comparison districts. Hartford Public High School offers fewer years of foreign language instruction than three of the four high schools in the comparison districts. Weaver High School in Hartford offers fewer than half of the years of foreign language instruction offered by three of the four high schools in the comparison districts.

Figure 50 – Years of Foreign Language Instruction

Hartford, Farmington, Glastonbury & West Hartford High Schools



Source: Connecticut State Department of Education, 1992w-dddd.

6. Library Books and Periodicals

In this category which includes expenditures for library books, reference books, periodicals, and newspapers for general and school library use, Hartford spent an average of $5 per pupil over the three year period from 1988-89 through 1990-91. This figure represents less than 28% of the three year average for the twenty-two districts in the region. During this same period of time West Hartford spent more than four times this amount, and Farmington spent more than seven times this amount. Glastonbury spent nearly three times this amount for library books and periodicals. This pattern of low spending on library books and periodicals is associated with the less than fair ratings given most of the Hartford Public School libraries by the internal Central Committee for the Status of the Library Media Program (1989).

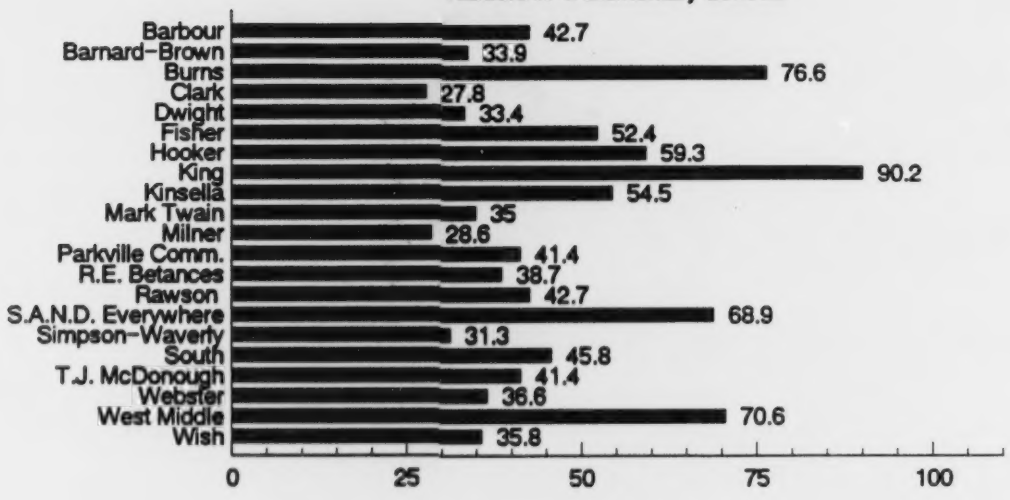
7. Equipment

In this category which includes expenditures for the acquisition or lease/purchase of equipment, Hartford spent substantially less than the average for the twenty-two districts in the region and than the three comparison districts. Hartford spent an average of $25 per pupil on equipment during the three year period from 1988-89 through 1990-91. During this same period of time the average expenditure for the twenty-two districts in the region was $97 per pupil, nearly four times the Hartford average. Farmington, Glastonbury, and West Hartford, with expenditures of $110, $115, and $109, respectively, each spent more than four times as much per pupil as Hartford during this same time period.

This pattern of low expenditures for equipment in Hartford is reflected in the comparisons of the number of students per academic computer at the elementary, middle, and high schools in Hartford and the three comparison districts. Figures 51 and 52 depict the numbers of students per academic computer in the elementary schools in Hartford and Farmington, Glastonbury, and West Hartford. The number of students per academic computer in Hartford elementary schools ranges from a low of 27.8 at Clark School to a high of 90.2 at King School. Among the elementary schools in the comparison districts the range runs from 13.3 students per academic computer at the Academy School in the Glastonbury School District to 44.4 students per academic computer in the West Hartford School District. In general the Hartford elementary schools have higher ratios of students to academic computers.

Figure 51 – Students Per Academic Computer

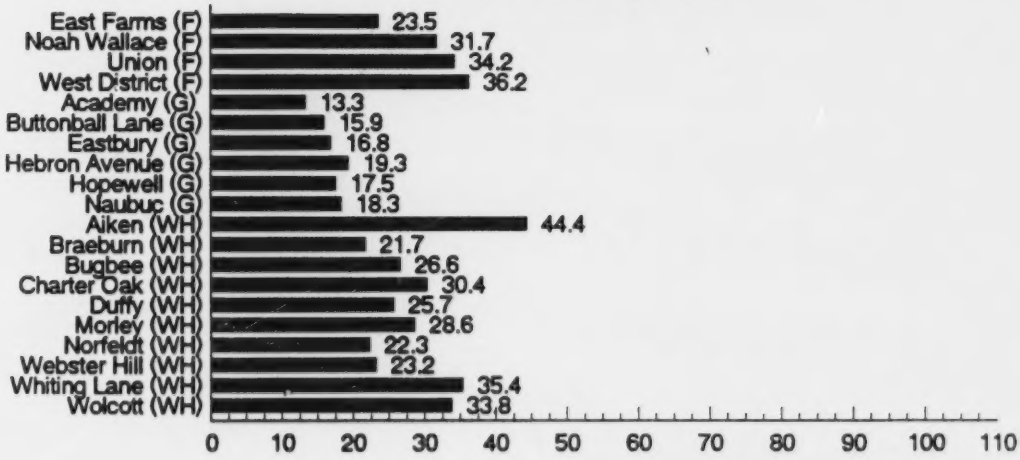
Hartford K–6 Elementary Schools



Source: Connecticut State Department of Education, 1992w-dddd.

Figure 52 – Students Per Academic Computer

Farmington, Glastonbury, West Hartford
K–6 Elementary Schools

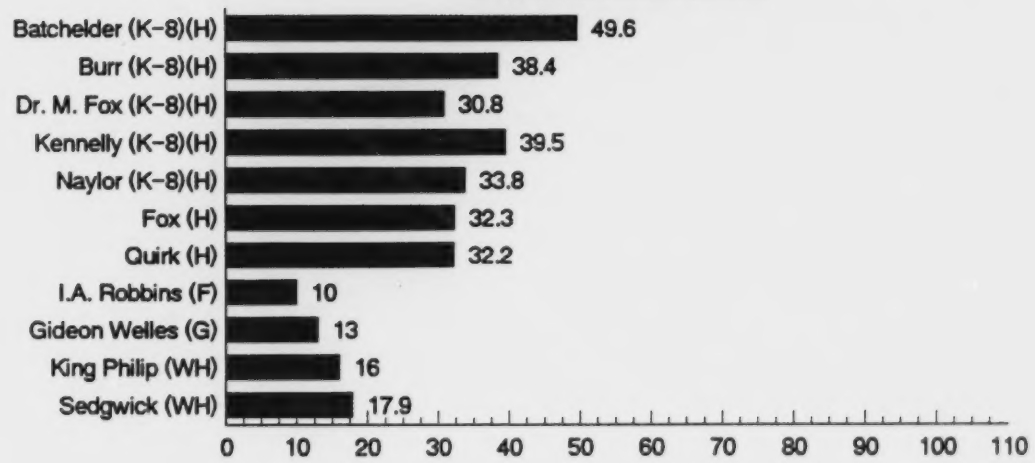


Source: Connecticut State Department of Education, 1992w-dddd.

Figure 53 presents data on the number of students per academic computer at the middle school level in Hartford and the three comparison districts. In this and other school-level comparisons the K-8 elementary schools in Hartford are included with the middle schools. These K-8 schools are: Batchelder, Burr, Dr. M. Fox, Kennelly, and Naylor. The two middle schools in Hartford are Fox and Quirk. Figure 53 indicates that the Hartford middle schools have substantially higher ratios of students to academic computers than do the middle schools in Farmington, Glastonbury, and West Hartford. Fox and Quirk each have about 32 students per academic computer compared to I.A. Robbins, Gideon Welles, King Philip and Sedgwick with 10, 13, 16, and 17.9 students per academic computer, respectively.

Figure 53 – Students Per Academic Computer

Hartford, Farmington, Glastonbury & West Hartford Middle Schools

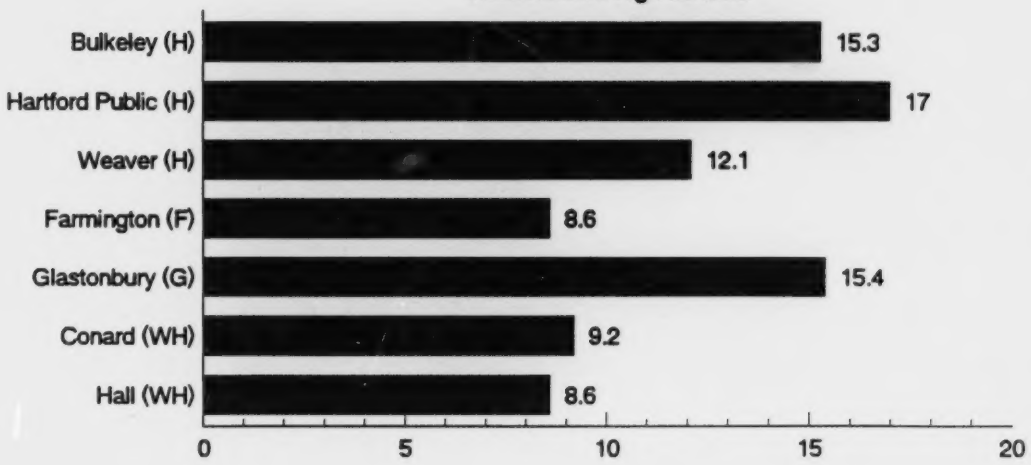


Source: Connecticut State Department of Education, 1992w-dddd.

Figure 54 presents data on the number of students per academic computer at the high schools in Hartford and the comparison districts. The Hartford high schools have higher student to computer ratios than the high schools in the comparison districts, with the exception of Glastonbury High School. The Hartford High Schools, Bulkeley, Hartford Public, and Weaver have 15.3, 17.0, and 12.1 students per academic computer. Glastonbury High School has 15.4 students per academic computer, a higher ratio than two of the three Hartford High Schools. However, Farmington High School, Conard High School, and Hall High School have only 8.6, 9.2, and 8.6 students per academic computer, respectively.

Figure 54 – Students Per Academic Computer

Hartford, Farmington, Glastonbury & West Hartford High Schools



Source: Connecticut State Department of Education, 1992w-dddd.

8. Tuition

Tuition refers to tuition paid to other educational agencies or nonpublic schools for services to students residing within a school district. The per pupil expenditure pertains to students actually receiving such services. At $16,596 per pupil served, Hartford spends less than the average of $19,014 for the districts in the region and less than the three comparison districts.

9. Plant Operation

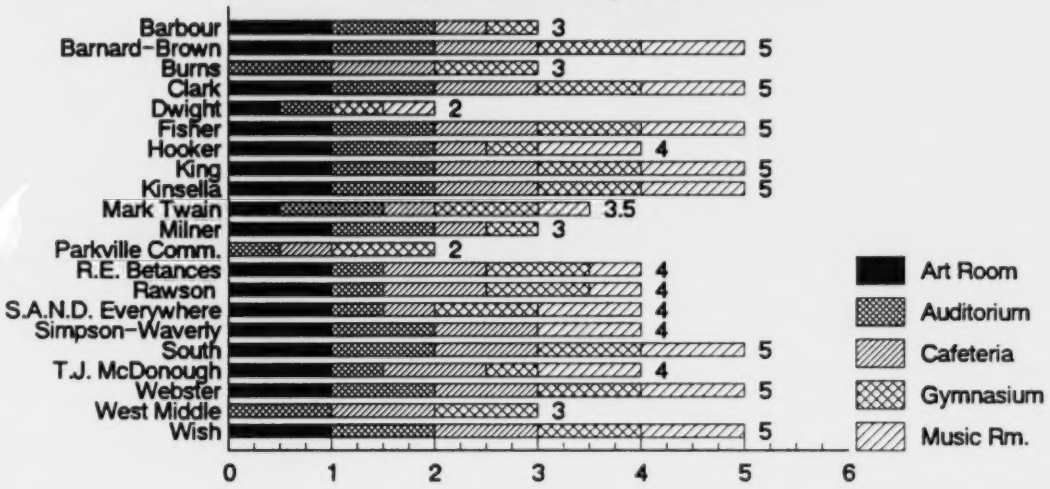
Hartford spent an average of $162 per pupil on plant operation over the three years from 1988-89 through 1990-91. This was $100 less per pupil than the average for the twenty-two districts in the region. Farmington, Glastonbury, and West Hartford spent $300, $201, and $206, respectively. Thus Hartford spent substantially less on plant operation per pupil than the comparison districts.

Differences in plant operating expenditures will take a number of different forms from general quality of the physical plant to the size of physical facilities. Figures 55, 56, 57, and 58 present data from the Strategic School Profiles (Connecticut State Department of Education, 1992w-dddd) on the availability of specialized facilities in the schools in Hartford and the three comparison communities. Figures 55 and 56 depict the facilities of the elementary schools in Hartford and the three comparison communities. Five kinds of specialized facilities are considered: art rooms, auditoriums, cafeterias, gymnasia, and music rooms. If a school has a particular kind of room, it is represented as one unit on the scale of the horizontal axis. If a type of room shares a physical space, it is represented as .5 on the horizontal axis. The figures display both the kinds of rooms available in each school and the total number of rooms. A school with all five types of rooms and no sharing of physical spaces received a score of 5.

Comparing the two figures, it is clear that Hartford has a greater proportion of schools with low total scores than the other three districts. Six of the twenty-one k-6 Hartford elementary schools have total scores of 3 or lower; no elementary school in the three comparison districts has a total score of less than 3.5.

Figure 55 – Art Rooms, Auds., Cafeterias Gymnasia and Music Rooms Per School

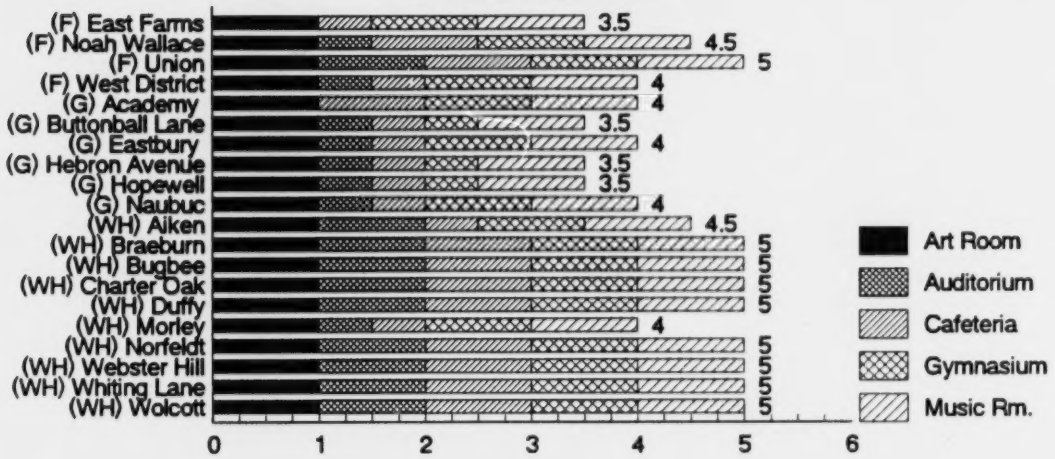
Hartford K–6 Elementary Schools



Source: Connecticut State Department of Education, 1992w-dddd.

Figure 56 – Art Rooms, Auds., Cafeterias Gymnasia and Music Rooms Per School

Farmington, Glastonbury, West Hartford
K–6 Elementary Schools

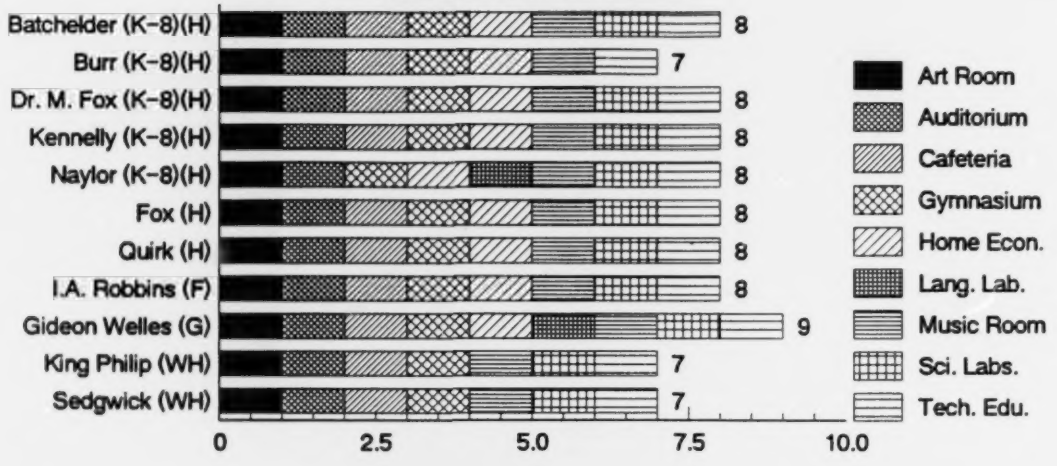


Source: Connecticut State Department of Education, 1992w-dddd.

Figure 57 presents data on the availability of specialized rooms in the middle schools of Hartford and the three comparison communities. Although most Hartford middle schools are missing a language laboratory, in general the specialized facilities appear comparable to those in middle schools in the comparison communities.

Figure 57 – Art Rm., Aud., Caf., Gym, HE Lng. Lab., Mus. Rm., Sci. Lab, Tech Rm.

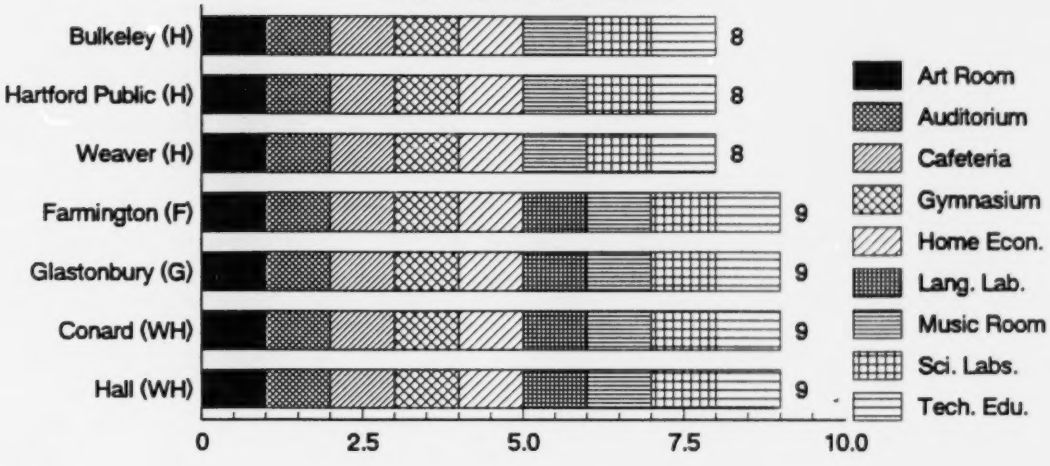
Hartford, Farmington, Glastonbury & West Hartford Middle Schools



Source: Connecticut State Department of Education, 1992w-dddd.

Figure 58 presents data on the specialized facilities available in the high schools in Hartford and the comparison communities. The Hartford high schools and the four high schools in the comparison communities have in common, eight of the specialized rooms. The three Hartford high schools lack the language laboratory rooms found in the four high schools in the other communities. This reflects lack of funds for equipment as much as lack of funds for plant operation.

Figure 58 – Art Rm., Aud., Caf., Gym, HE Lng. Lab., Mus. Rm., Sci. Lab, Tech Rm.
Hartford, Farmington, Glastonbury & West Hartford High Schools



Source: Connecticut State Department of Education, 1992w-dddd.

10. Transportation

The costs of transporting pupils are reflected in the row in Table 12 labeled transportation. The figures in this row reflect the costs per pupil actually transported. The Hartford district shows expenditures in this category substantially above expenditures for the other districts. Hartford's expenditure of $809 per pupil transported is over twice as high as the average of $378 for the twenty-two districts in the region.

11. Purchased Services

The costs associated with insurance, travel and transportation, expenditures for nonmembership pupils and other purchased services are reflected in the category of

purchased services. The average expenditure of $142 in Hartford for the three years from 1988-89 through 1990-91 is about the same as the average of $138 for the twenty-two districts in the region. Thus, expenditures in this category are not responsible for elevating the total expenditures above the average.

C) OUTCOME CATEGORIES

In comparing the outcomes of the Hartford Public Schools with those for other districts in the region, four types of outcomes will be considered: 1) Connecticut Mastery Test Results, 2) Credits Earned in Selected Courses, 3) SAT results, and 4) post-secondary education.

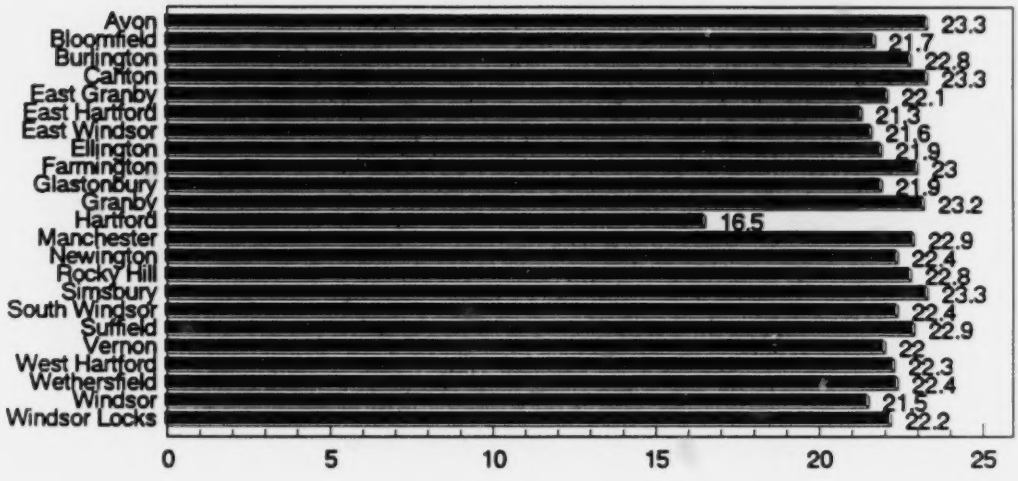
1. Connecticut Mastery Tests

a) Mathematics

The performance of fourth students in the twenty-two districts in the Hartford region on the Connecticut Mastery Test in mathematics is presented in Figure 59 (State of Connecticut, Department of Education, 1992a). The fourth grade mastery test consists of 100 items assessing twenty-five objectives in the domains of conceptual understanding, occupational skills, problem solving/applications, and measurement/geometry. Figure 59 indicates that students in the districts in the Hartford region on average master at least 21.3 of the 25 objectives on the test, with the exception of students in Hartford. Hartford fourth graders, in contrast, mastery only 16.5 of the 25 objectives. Thus, the performance of Hartford fourth graders is markedly lower than the performance of students in the other 21 districts where average scores range from 21.3 to 23.3.

Figure 59 – Average Number of 4th Grade Math Objectives Mastered – 1991–1992

Hartford & Surrounding Districts

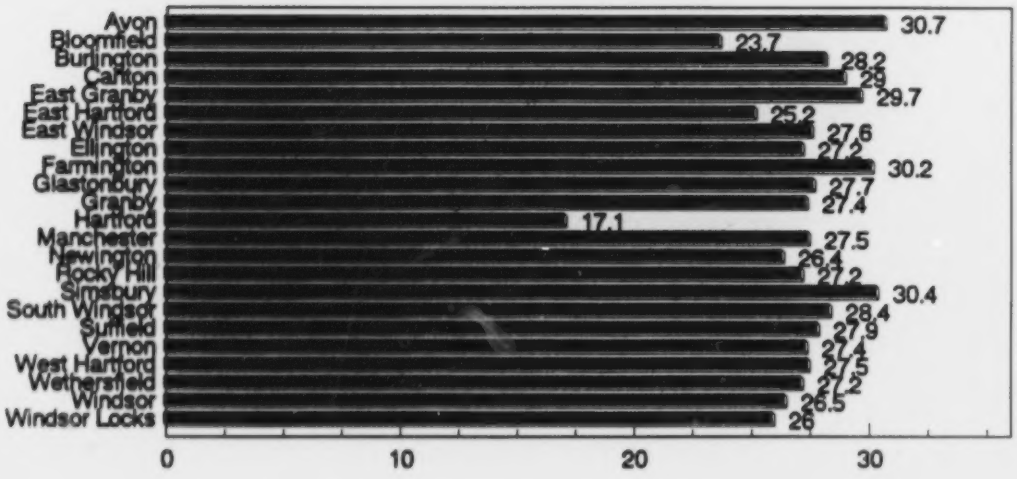


Source: State of Connecticut, Department of Education, 1992a.

Figure 60 presents the average number of math objectives mastered by sixth graders in the twenty-two districts in the Hartford region. The sixth grade tests consists of 144 items assessing thirty-six objectives in the domains of conceptual understanding, computation skills, problem solving/applications, and measurement/geometry (State of Connecticut Department of Education, 1992b). With only one exception, the number of objectives mastered by students in the twenty-two districts in the region ranges from 23.7 to 30.7. The exception is Hartford where sixth graders averaged only 17.1 objectives mastered on the test. The test performance of the Hartford students falls substantially the bottom of this broader range of scores in the other twenty-one districts.

Figure 60 – Average Number of 6th Grade Math Objectives Mastered – 1991 – 1992

Hartford & Surrounding Districts

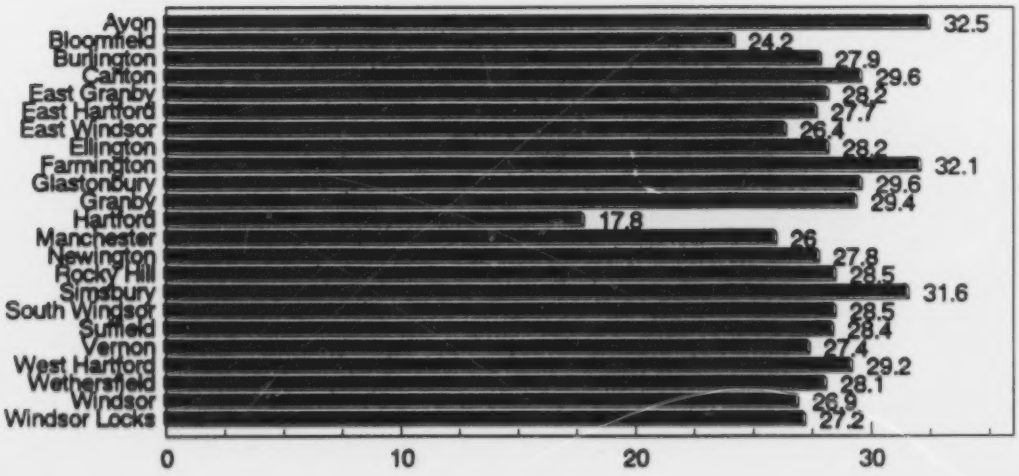


Source: State of Connecticut, Department of Education, 1992b.

Figure 61 presents the average number of objectives mastered by eighth graders on the mastery test in mathematics. The eighth grade test uses 144 items to assess thirty-six objectives in the domains of conceptual understanding, computational skills, problem solving/applications and measurement/geometry (State of Connecticut Department of Education, 1992b). With one exception the average scores of eighth graders in all districts in the region range between 24.1 and 32.5. The exception is Hartford where the average score of eighth graders on the Connecticut Mastery Test in mathematics is 17.8. Thus Hartford students score substantially below the range of average scores from other districts in the region.

Figure 61 - Average Number of 8th Grade Math Objectives Mastered - 1991-1992

Hartford & Surrounding Districts



Source: State of Connecticut, Department of Education, 1992c.

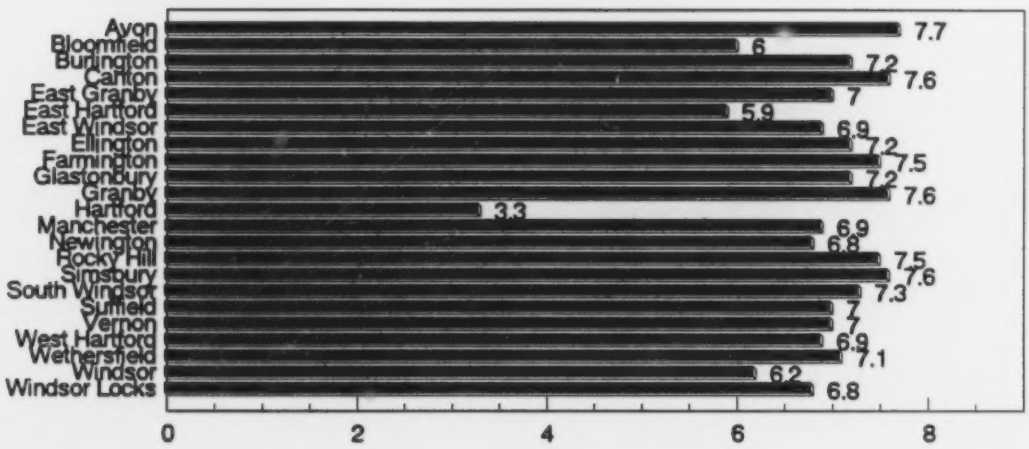
b) Language Arts

Figure 62 presents the average performance of fourth grade students in districts in the Hartford region on the Connecticut Mastery Test in language arts. The language arts test contains 103 items that encompass nine objectives in the domains of reading comprehension, listening comprehension, locating information, and writing mechanics (State of Connecticut Department of Education, 1992a). With one exception the average scores of students in the districts in the region range from 5.9 objectives mastered to 7.7 objectives mastered. The exception is Hartford where fourth graders averaged only 3.3 language arts objectives mastered. Thus Hartford fourth graders performed less well than students in the other twenty-two districts in the region.

Figure 62 – Avg. Number of 4th Grade Lang. Arts Objectives Mastered

1991 – 1992

Hartford and Surrounding Districts



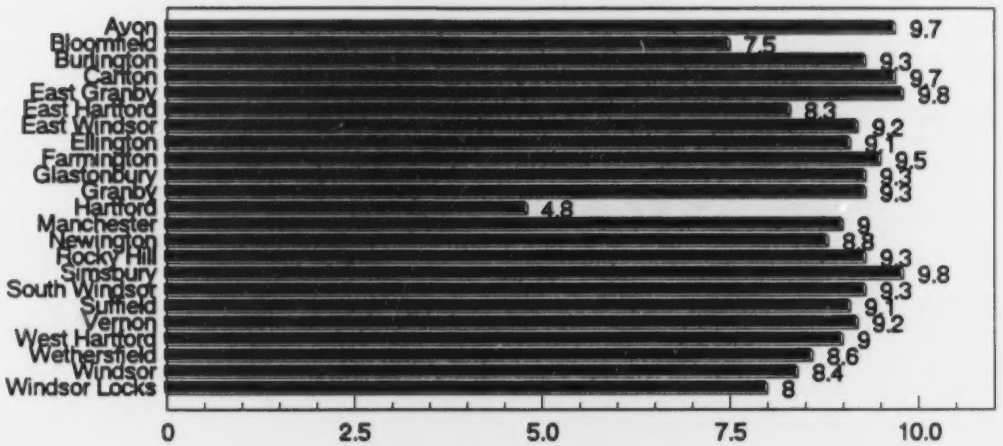
Source: State of Connecticut, Department of Education, 1992a

Figure 63 presents the average number of language arts objectives mastered by sixth graders in districts in the Hartford region. The sixth grade language arts test consists of 112 items covering 11 objectives in the areas of reading comprehension, listening comprehension, study skills, and writing mechanics (State of Connecticut, Department of Education, 1992b). Figure 63 shows that, with one exception, the average scores for students in the districts range from 7.5 to 9.8 language arts objectives mastered. The exception is Hartford where sixth graders averaged mastery of only 4.8 objectives. Thus Hartford students do less well than students in the other twenty-one districts in the region.

Figure 63 – Avg. Number of 6th Grade Lang. Arts Objectives Mastered

1991 – 1992

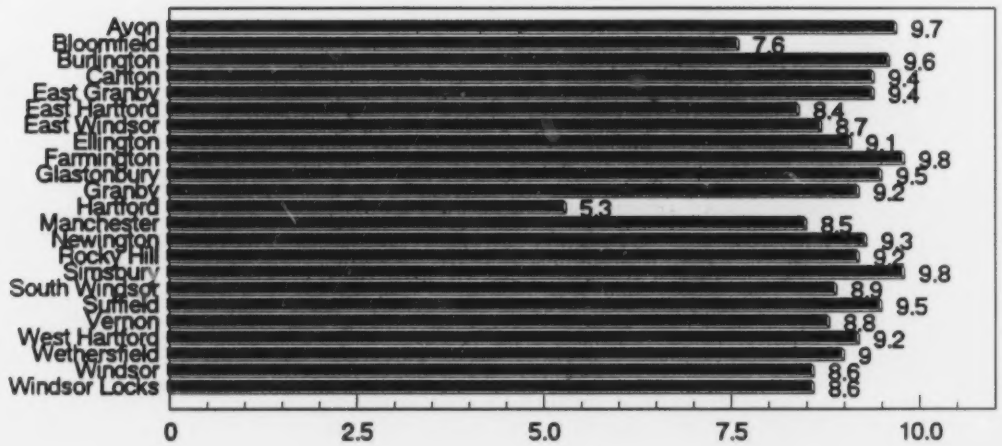
Hartford and Surrounding Districts



Source: State of Connecticut, Department of Education, 1992b

Figure 64 shows similar performance patterns for eighth grade students in Hartford. The eighth grade language arts test uses 111 items to cover 11 objectives in the areas of reading comprehension, listening comprehension, study skills, and writing mechanics (State of Connecticut, Department of Education, 1992c). Once again, with a single exception, the average number of eighth grade objectives mastered ranges from 7.6 to 9.8. Hartford is the exception with average performance on the language arts test of only 5.3 objectives mastered. Hartford eighth graders have the lowest average level of performance of any of the twenty-two districts in the region.

Figure 64 – Avg. Number of 8th Grade Lang. Arts Objectives Mastered – 1991 – 1992 Hartford and Surrounding Districts

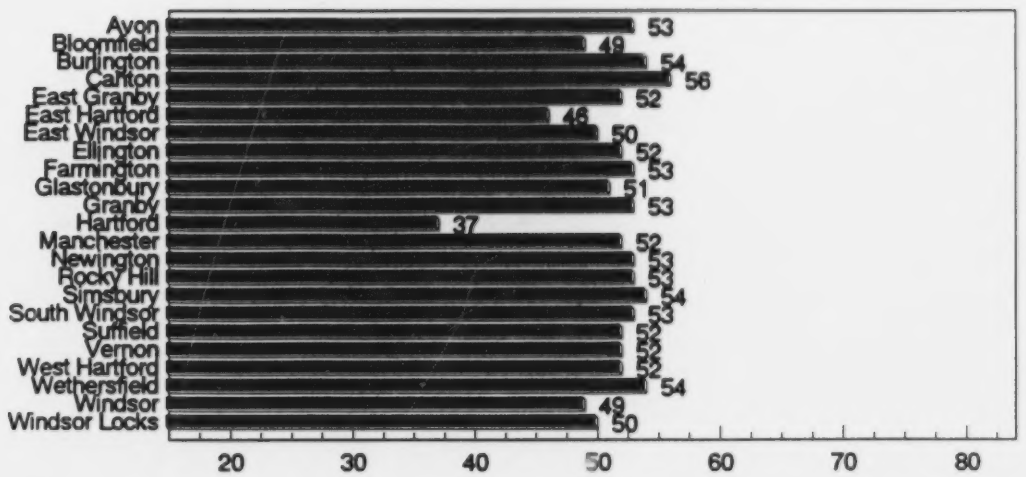


Source: State of Connecticut, Department of Education, 1992c

The performance of fourth grade students in the districts in the Hartford region on the Degrees of Reading Power Test is depicted in Figure 65. Scores are reported in DRP units which identify the difficulty or readibility level of prose that students can comprehend. Average elementary textbooks for grades three to five range from 35 to 58 DRP units in difficulty (State of Connecticut, Department of Education, 1992a). Figure 65 indicates that with on exception, the average scores of fourth graders in these districts ranges from 46 DRP units to 56 DRP units. Hartford is the exception with the average performance of fourth grades at 37 DRP units. Hartford fourth graders average the lowest score of fourth graders in any of the districts in the region.

Figure 65 – Average 4th Grade DRP Unit Scores – 1991 – 1992

Hartford & Surrounding Districts

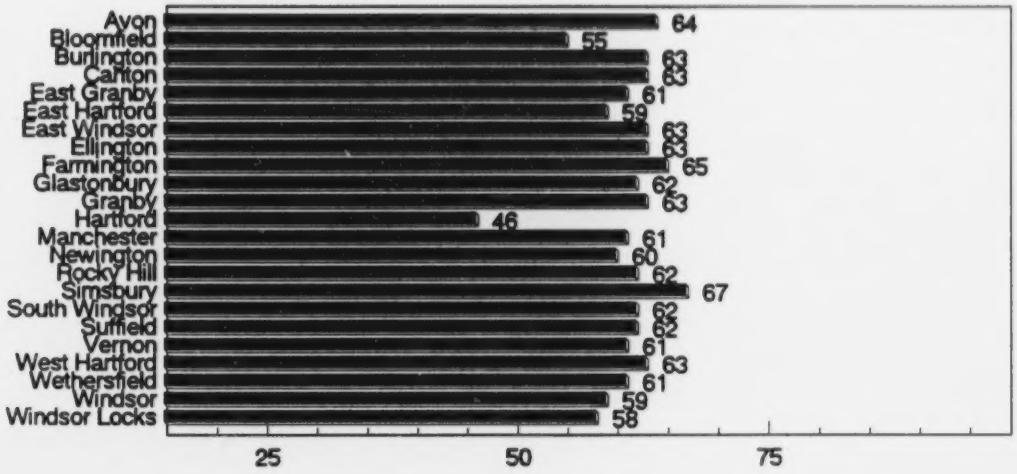


Source: State of Connecticut, Department of Education, 1992a

Figure 66 depicts the scores on the DRP test of sixth graders from the districts in the Hartford region. With one exception, the scores range from 55 to 67 DRP units. Hartford, with an average score of 46 DRP units, is the exception and the district with the lowest performing sixth grade students.

Figure 66 – Average 6th Grade DRP Unit Score – 1991 – 1992

Hartford & Surrounding Districts

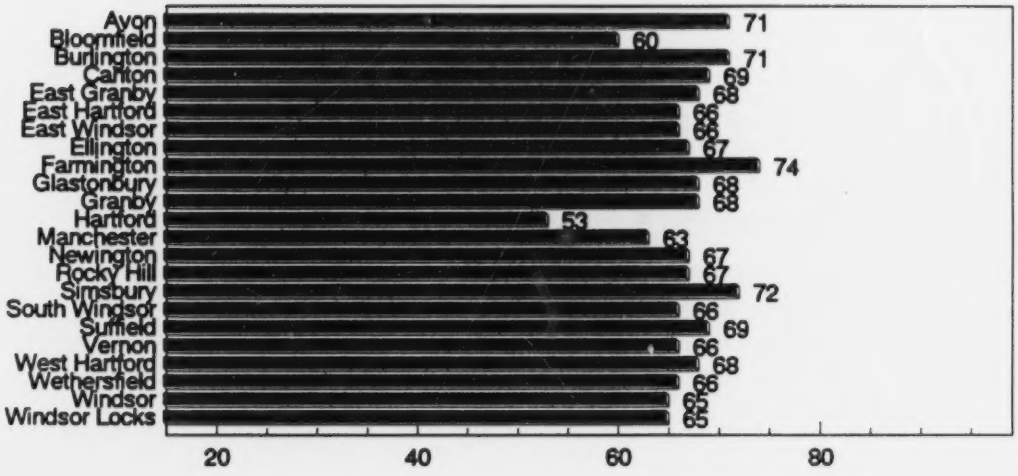


Source: State of Connecticut, Department of Education, 1992b

Figure 67 shows the DRP scores for eighth grade students from the twenty-two districts in the Hartford region. The scores for the eighth graders range from 60 to 74 with the exception of Hartford where the average eighth grade score was 53. Thus, Hartford eighth graders, like Hartford fourth and sixth graders, scored the lowest of any district in the region.

Figure 67 - Average 8th Grade DRP Unit Score - 1991 - 1992

Hartford & Surrounding Districts

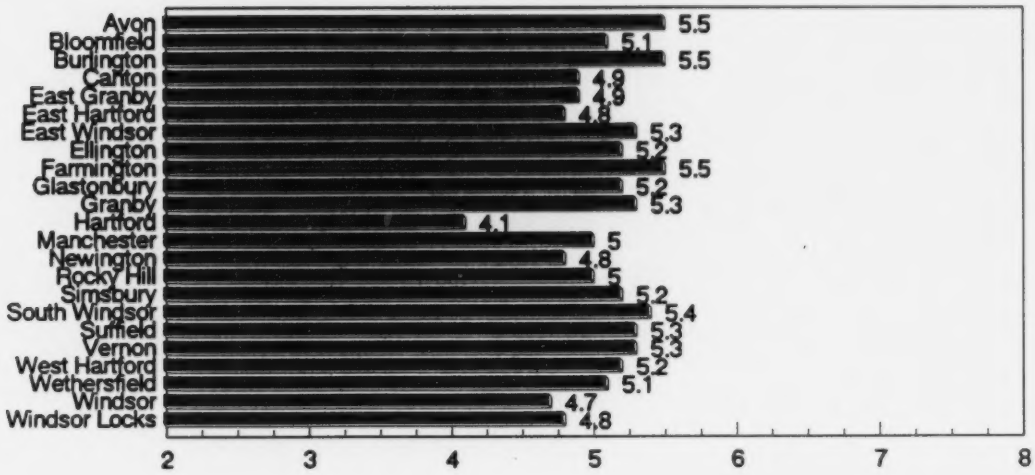


Source: State of Connecticut, Department of Education, 1992c

The holistic scores for the writing performance of fourth graders in the districts in the Hartford region is displayed in Figure 68. The holistic scores rate written products on the basis of their overall quality (State of Connecticut, Department of Education, 1992a). Each student paper received a final score of between 2 and 8, with 2 representing a poor paper and 8 representing a superior paper. Figure 68 indicates that the average scores of fourth graders from all but one district range between 4.7 and 5.5. The exception is Hartford where fourth graders had an average wholistic score of 4.1. Thus the writing performance of Hartford fourth graders is the lowest of any of the districts in the region.

Figure 68 - Average 4th Grade Holistic Scores in Writing - 1991 - 1992

Hartford & Surrounding Districts

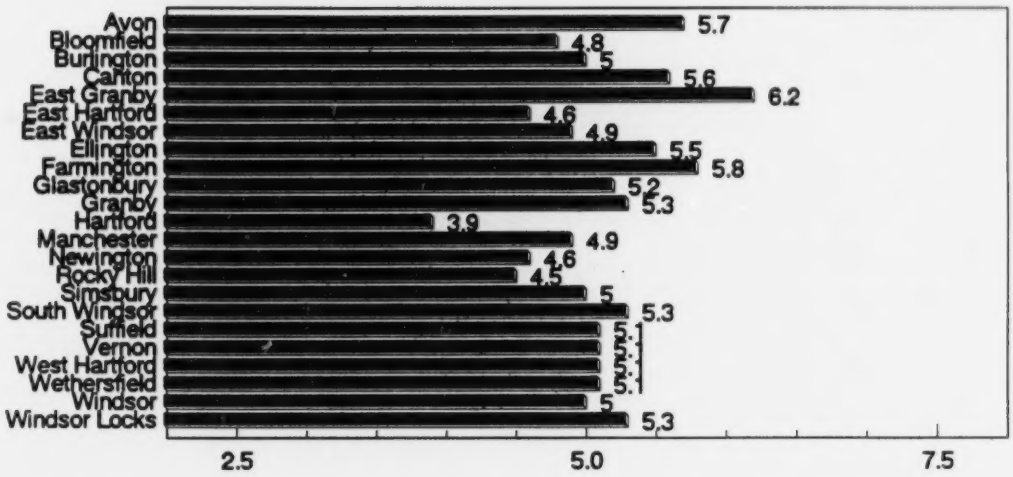


Source: State of Connecticut, Department of Education, 1992a.

The holistic writing scores for sixth graders in the twenty-two districts appear in Figure 69. The scores of sixth graders in these districts average from between 4.5 to 5.8, with one exception. Hartford is the exception with an average score of 3.9. Thus, once again, Hartford students perform at a level lower than that of all of the other districts in the region.

Figure 69 – Average 6th Grade Holistic Score in Writing – 1991 – 1992

Hartford & Surrounding Districts

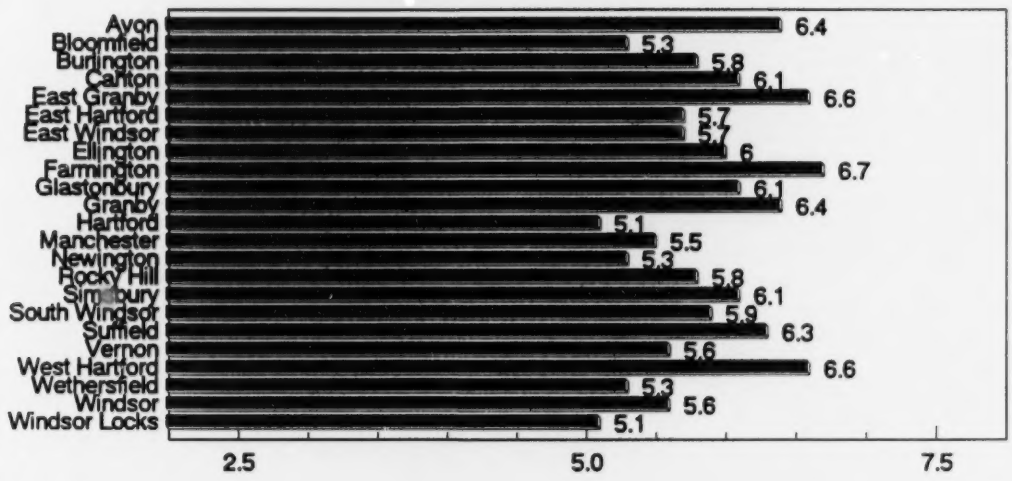


Source: State of Connecticut, Department of Education, 1992b.

Figure 70 presents the holistic writing scores for eighth graders in the twenty-two districts in the Hartford region. The scores range from a low 5.1 in Hartford and Windsor locks to a high of 6.7 in Farmington. Hartford, while still at the lowest point in the range of scores, is joined this time by Windsor Locks. Of course, in Windsor Locks only 6.5% of eighth grade students were exempt from the test and 99.1% of those eligible for the test actually took it. In Hartford, 12.6% of eighth graders were exempt from the test, and 93.7% of those eligible actually took the test.

Figure 70 - Average 8th Grade Holistic Scores in Writing - 1991 - 1992

Hartford & Surrounding Districts



Source: State of Connecticut, Department of Education, 1992c.

The comparative performance disadvantage for Hartford students is clear and consistent in this review of the scores on the Connecticut Mastery Test. Hartford students rank at the bottom of all twenty-two districts in the region on all parts of the Mastery Test and at all grade levels. Moreover, in many of the tests the average scores for Hartford students are substantially lower than those of students in the next lowest scoring district.

2. Credits Earned

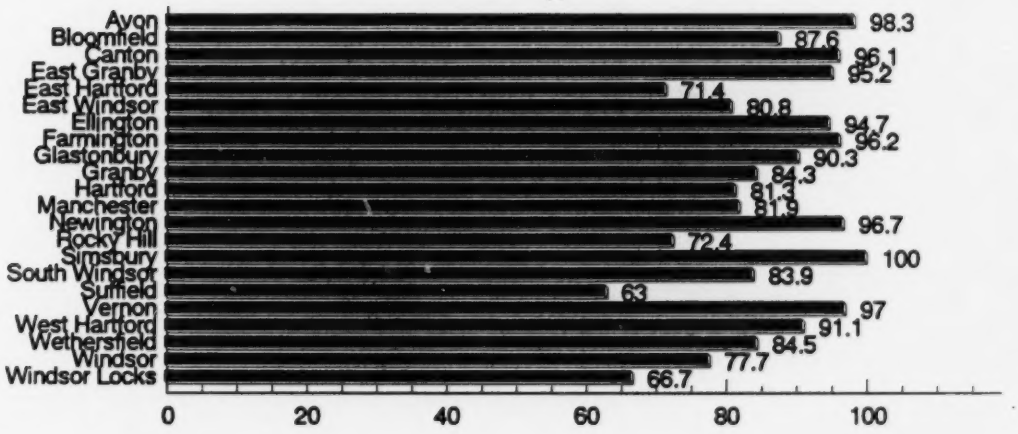
The number of credits earned in particular subjects by recent high school graduates provide another indicator of the outcomes of the schooling process as well as additional insight into the offerings of the various school programs. In considering these patterns of credit accumulation, however, it is important to keep in mind that Hartford has a higher dropout rate than other districts in the region and so the 1991

graduates represent a smaller proportion of the initial class of students. Thus, the patterns of credit accumulation for 1991 Hartford graduates obviously overstate the credit accumulation of the broader class of students including graduates and dropouts.

Figure 71 depicts the percentages of 1991 graduates of the twenty-two Hartford region districts earning credits in algebra I or the equivalent. Only four districts of the twenty-one, East Hartford, Rocky Hill, Suffield, and Windsor Locks, have graduating classes with lower percentages earning credits in algebra I than Hartford where 81.3% of the 1991 graduates earned credits in algebra I or the equivalent.

Figure 71 - % of 1991 Graduates Earning Credits in Algebra I or Equivalent

Hartford & Surrounding Districts



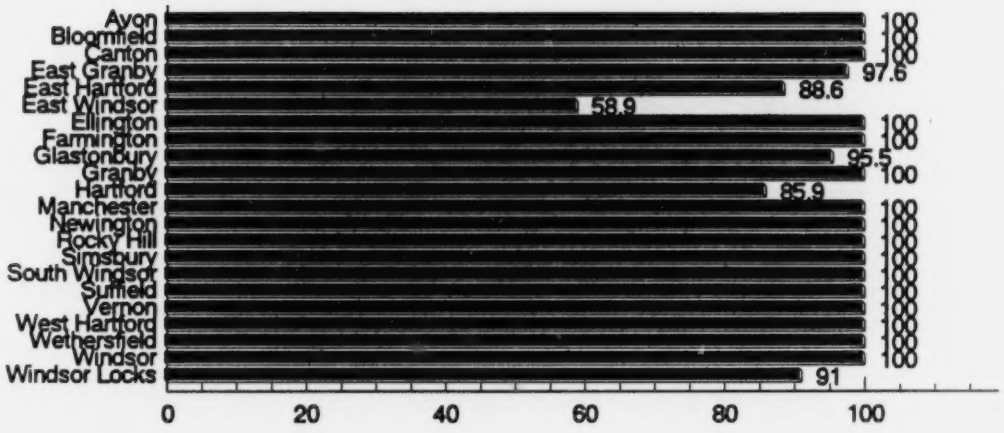
Source: Connecticut State Department of Education, 1992a-v.

Figure 72 presents the percentages of 1991 graduates of the twenty-two Hartford region distrcits earning credits in English literature. In sixteen of the twenty-two districts, 100% of the graduates earned credits in English literature. In six districts, including Hartford, fewer than 100% of the students earned credits in English literature. Credits in English literature were earned by 85.% of the Hartford graduates.

Only one district, East Windsor, has a lower percentage of graduates (58.9%) earning credits in English literature.

Figure 72 – % of 1991 Graduates Earning Credits in English Literature

Hartford & Surrounding Districts

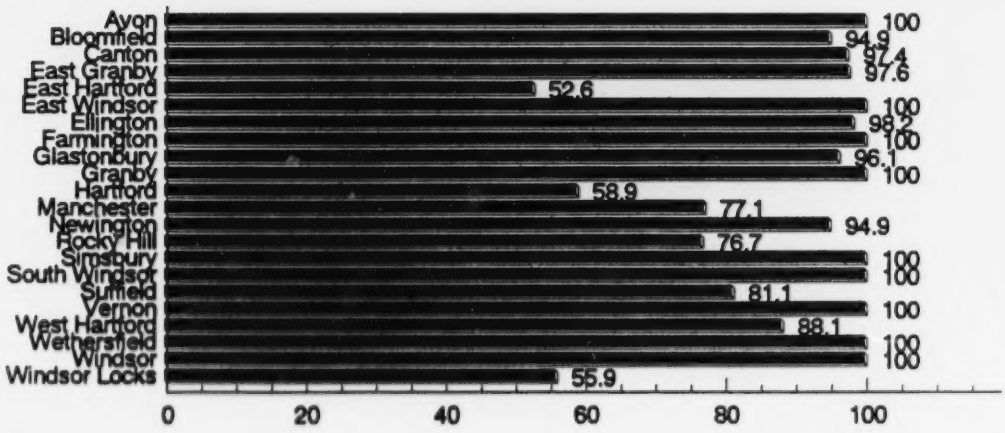


Source: Connecticut State Department of Education, 1992a-v.

The proportions of graduates of the twenty-two districts earning credits in laboratory science are presented in Figure 73. Fifteen of the twenty-two districts have 94% or more graduates earning credits in laboratory science. Only two districts, East Hartford with 52.6% earning credits and Windsor Locks with 55.9% earning credits, have a smaller percentage of students earning credits in laboratory science than Hartford where only 58.9% of the 1991 graduates earned credits in laboratory science.

Figure 73 – % of 1991 Graduates Earning Credits in Laboratory Science

Hartford & Surrounding Districts

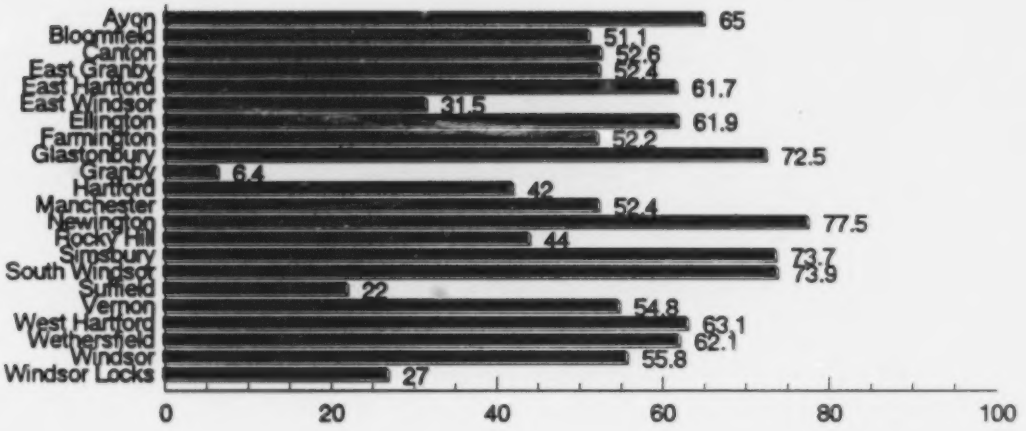


Source: Connecticut State Department of Education, 1992a-v.

Figure 74 presents the percentages of 1991 graduates in the twenty-two districts earning credits for three or more years of foreign language study. Districts range from Granby where only 6.4% of graduates earned credits in three or more years of foreign language study to Newington where 77.5% earned such credits. Hartford, with 42% of graduates earning credits in foreign language study, has a greater percentage of students earning three or more years of foreign language credits than only three other districts: Grandy, Suffield, and Windsor Locks.

Figure 74 – % of 1991 Graduates Earning Credits in Foreign Language/3 or more yr

Hartford & Surrounding Districts

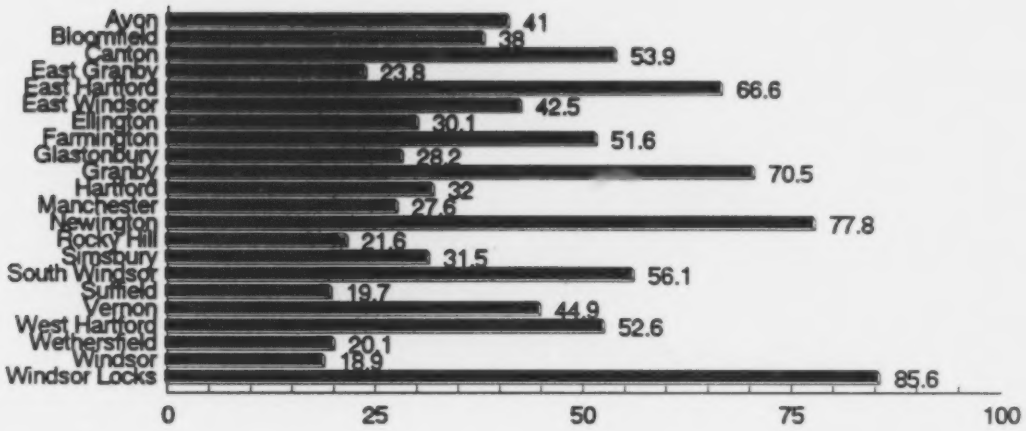


Source: Connecticut State Department of Education, 1992a-v.

Figure 75 shows the percentages of 1991 graduates earning credits for two or more years of study in the arts. Hartford, 32% of graduates earning such credits, is about in the middle of the group of districts with 12 districts having a higher percentage of graduates earning two or more years of arts credits, and nine districts having a lower percentage of graduates earning credits.

Figure 75 - % of 1991 Graduates Earning Credits in the Arts/2 or more years

Hartford & Surrounding Districts

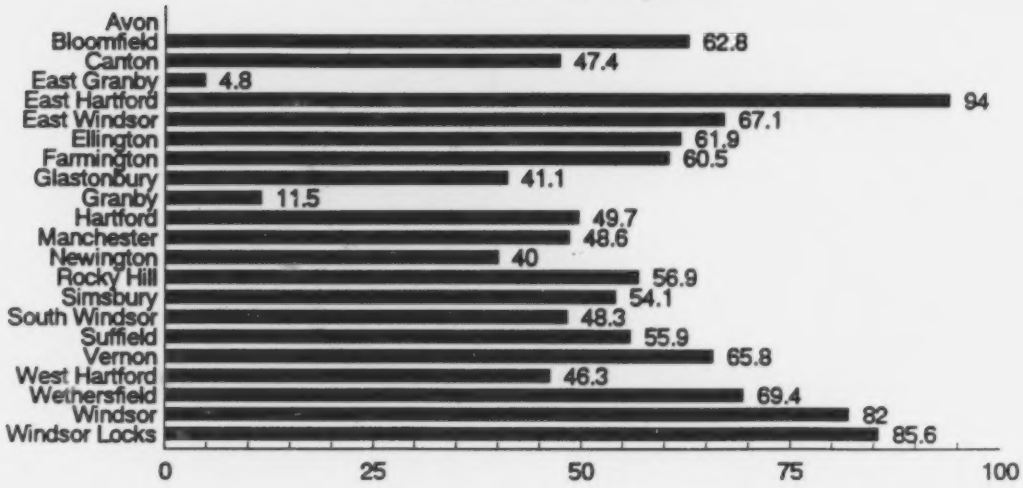


Source: Connecticut State Department of Education, 1992a-v.

The percentages of 1991 graduates earning credits for two or more years of vocational/technical courses are depicted in Figure 76. Hartford, with 49.7% of graduates earning such credits, is again about in the middle of the group of twenty-two districts, with 12 districts having a higher percentage of graduates earning two or more years of voc/tech credits and nine districts having a lower percentage of graduates earning credits. In view of the relatively lower credit accumulation of Hartford students in more academic courses, it is somewhat surprising that Hartford students do not show greater credit accumulation in the vocational/technical courses.

Figure 76 - % of 1991 Graduates Earning Credits in Voc-Tech/2 or more years

Hartford & Surrounding Districts

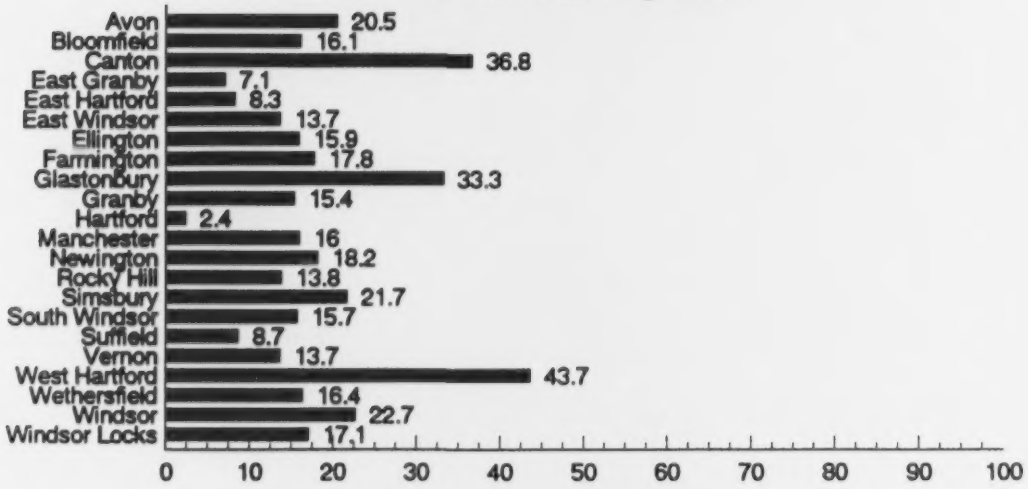


Source: Connecticut State Department of Education, 1992a-v.

Figure 77 presents the percentages of 1991 graduates earning credits in courses for college credit. The twenty-two districts range from a low in Hartford where only 2.4% of the students earned credits in courses for college credit to a high in West Hartford where 43.7% of the graduates earned such credits. Hartford is clearly at the bottom of range, with the next lowest district, East Granby, having over three times as many of its 1991 graduates (8.3%) earning credits in courses for college credit.

Figure 77 – % of 1991 Graduates Earning Credits in Courses for College Credit

Hartford & Surrounding Districts

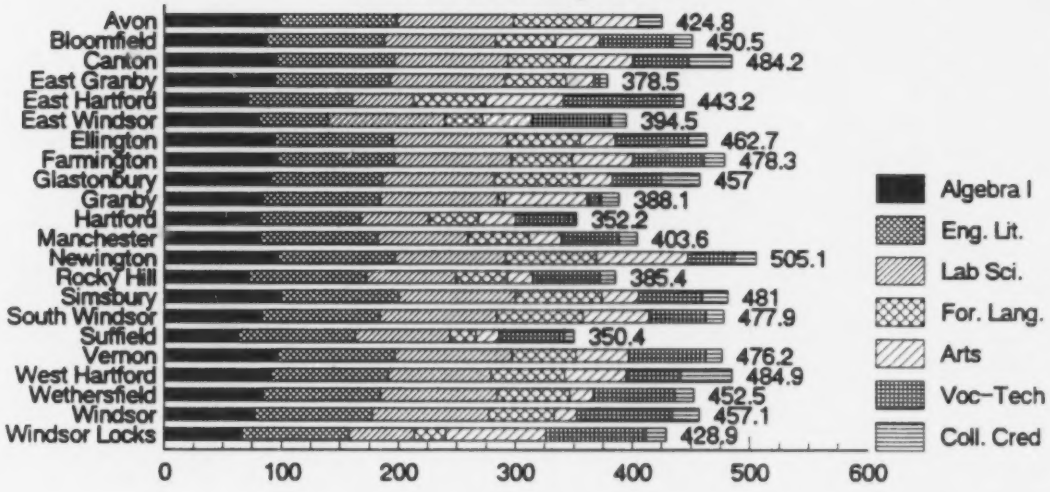


Source: Connecticut State Department of Education, 1992a-v.

The overall picuture for credit accumulation in these selected types of courses is shown in Figure 78. Although it is only in terms of courses for college credit the Hartford 1991 graduates rank at the very bottom of the twenty-two districts, Hartford graduates tend to be near the lower ranks in credits in algebra, English literature, and laboratory science. Hartford graduates tend to be near the middle ranks in the arts and vocational and technical course credit accumulation. As Figure 78 reveals, only one other district, Suffield, is ranked lower than Hartford in terms of the cumulative percentages of students earning credits in these selected courses.

Figure 78 – % of 1991 Graduates Earning Credits in Selected Courses

Hartford & Surrounding Districts



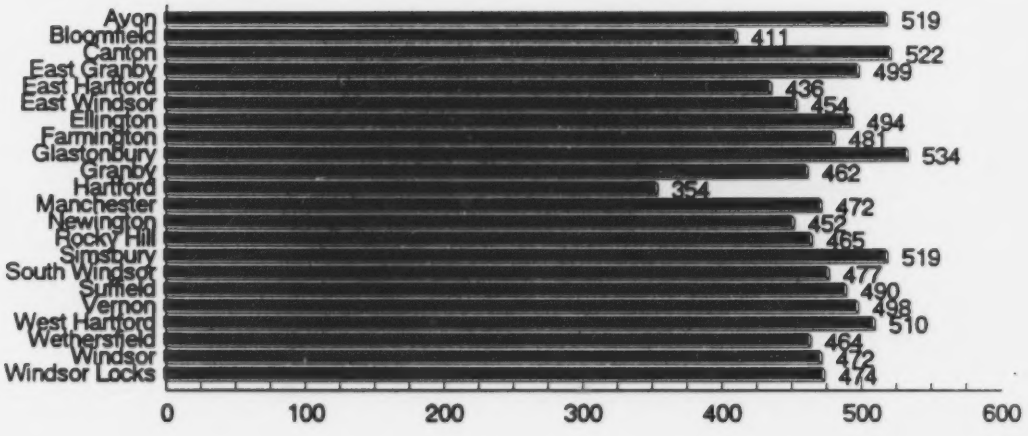
Source: Connecticut State Department of Education, 1992a-v.

3. SAT

Student scores on the Scholastic Aptitude Test offer another indication of performance. Figure 79 portrays the average math SAT scores for 1991 graduates of the twenty-two Hartford region school districts. The average scores range from a high of 534 in Glastonbury to a low of 354 in Hartford. Eighty-two points separate the average scores of Hartford graduates from the average scores of students in the next lowest scoring district, East Hartford.

Figure 79 – Average Math SAT Scores of 1991 Graduates Tested

Hartford & Surrounding Districts

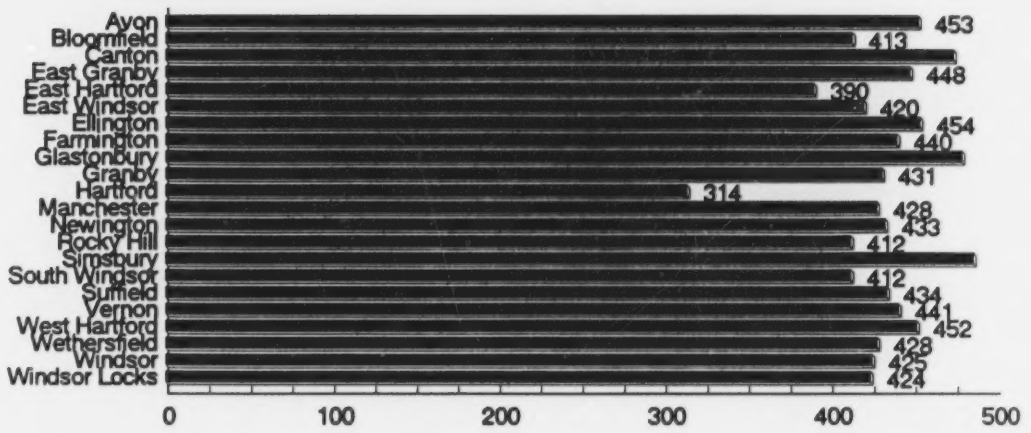


Source: Connecticut State Department of Education, 1992a-v.

The average student verbal SAT scores for graduates of the twenty-two districts are shown in Figure 80. The scores range from a high of 486 in Simsbury to a low of 314 in Hartford. Seventy-six points separate the average scores of Hartford graduates from the average scores of students in the next lowest scoring district, East Hartford.

Figure 80 – Average Verbal SAT Scores of 1991 Graduates Tested

Hartford & Surrounding Districts

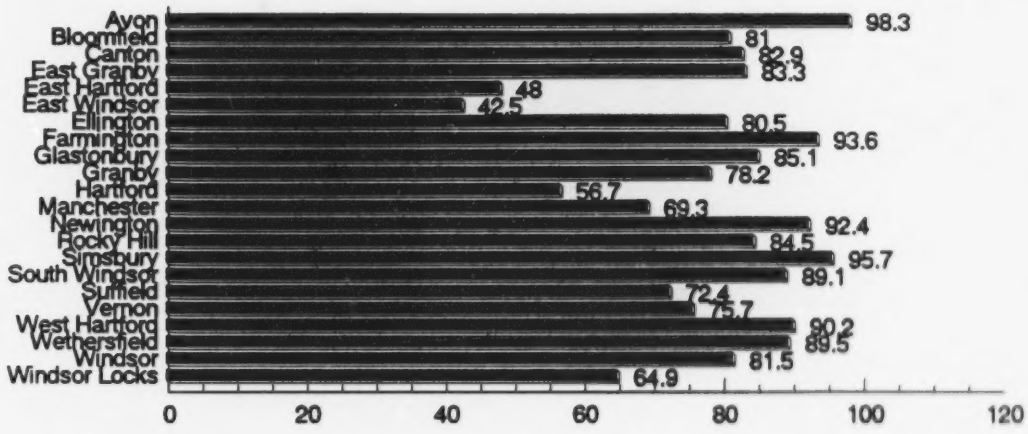


Source: Connecticut State Department of Education, 1992a-v.

In considering the scores of students on the SAT it is also important to consider the percentage of students actually taking the SAT in different districts. Since the SAT is taken voluntarily there can be considerable variation in the proportions of students in a district taking the test. Districts with relatively smaller proportions taking the test may appear to have higher average scores than would be truly reflective of the performance of the entire graduating class. Figure 81 presents the percentages of 1991 graduates of the twenty-two Hartford area districts taking the SAT test. The average participation rates range from a high of 92.4% in Newington to a low of 42.5% in East Windsor. Only East Windsor and East Hartford with 48% participating have lower percentages of their 1991 graduating class taking the SAT than Hartford with 56.7% taking the test. Thus, the lower percentage of students participating in the SAT in Hartford is likely to result in an overstatement of the actual performance of a greater proportion of the Hartford 1991 graduating class.

Figure 81 - Percentage of 1991 Graduates Taking SAT Tests

Hartford & Surrounding Districts



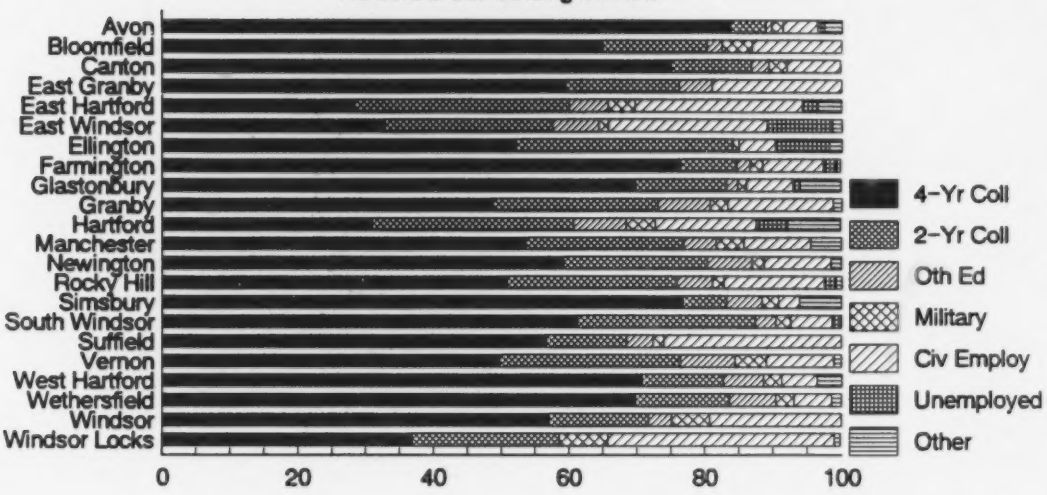
Source: Connecticut State Department of Education, 1992a-v.

4. Post-Secondary Education and Work Activities

Another indicator related to student outcomes is the post-secondary education and work activities of graduates. Figure 82 shows the post-secondary education and work activities of graduates from the twenty-two Hartford area districts. Only one of the districts, East Hartford with 28.3%, has a smaller proportion of 1991 graduates going on to a four year college than Hartford with 31%. Two districts, Windsor Locks with 58.5% and East Hartford with 60% have smaller percentages of students going on to four year or two-year colleges than Hartford where only 60.6% of graduates attend such institutions after graduation. East Hartford reports the highest percentage of 1991 graduates as being unemployed, 9.6%, followed by Hartford with 4.6%. Combining the "unemployed" and "other" categories, Hartford has the highest percentage of graduates who are neither continuing their education nor employed with 12.4%, followed by East Windsor with 11.0%.

Figure 82 – % of 1991 Graduates Engaged in Education and Work Activities

Hartford & Surrounding Districts



Source: Connecticut State Department of Education, 1992a-v.

Section IV
State Standards

This sections examines state standards for educational programs and outcomes as an additional way of framing the data on the Hartford Public Schools and the performance of the students in those schools. Using expressions of state standards in policy, the remedial standards and state goals associated with the Connecticut Mastery Testing Program, and the Connecticut Common Core of Learning, standards are identified and used as benchmarks against which to judge the performance of the Hartford Public Schools.

A. State Standards for Minimally Adequate Education and Equal Educational Opportunity

Three documents prepared and adopted in Connecticut over the past decade provide an indication of evolving state standards and goals regarding quality education. These documents are the Guidelines for Equal Educational Opportunity of the Connecticut State Board of Education (1984), the Connecticut State Board of Education (1986) Policy Statement on Equal Educational Opportunity, and the Report of the Governor's Commission on Quality and Integrated Education (1990). Each of these documents provides insights into standards for quality education in Connecticut.

1. Guidelines for Equal Educational Opportunity

The Guidelines for Equal Educational Opportunity (Connecticut State Board of Education, 1984) adopted by the Connecticut State Board of Education in October of 1984 spell out the elements of equal educational opportunity for students in Connecticut as follows:

> While equal educational opportunity is a dynamic concept, certain elements emerge as critically important to schools and students. Access to educational opportunities, staff and material resources, program offerings, assessment of student outcomes, remedial education and funding are major elements of equal educational opportunity, elements that must interact in systematic ways. In a broad sense, progress in achieving equal educational opportunity can be measured by the reduction in inter-district, intra-district and inter-pupil disparities in educational opportunities as defined by these six elements. Equity in this sense does not mean an equal distribution of resources; rather, it implies that those who need more must receive more. (Connecticut State Board of Education, 1984, p. 34)

Sections II and III of this report have detailed many of the disparities in the services and the educational resources available to students in the Hartford region. Hartford students are disadvantaged in these comparisons in terms of staff quality and materials and educational outcomes. These disadvantages appear even without consideration of the more pressing needs of students in the Hartford Public Schools. When those needs are taken into consideration, then it is clear that Hartford students are receiving fewer opportunities in relation to their needs than students in surrounding districts.

In terms of access the Guidelines assert that:

> The goal of equity of access is that no group of students will demonstrate systematically different achievement based upon the differences--such as resident or race or sex--that its members brought with them when they entered school. (Connecticut State Board of Education, 1984, p. 34).

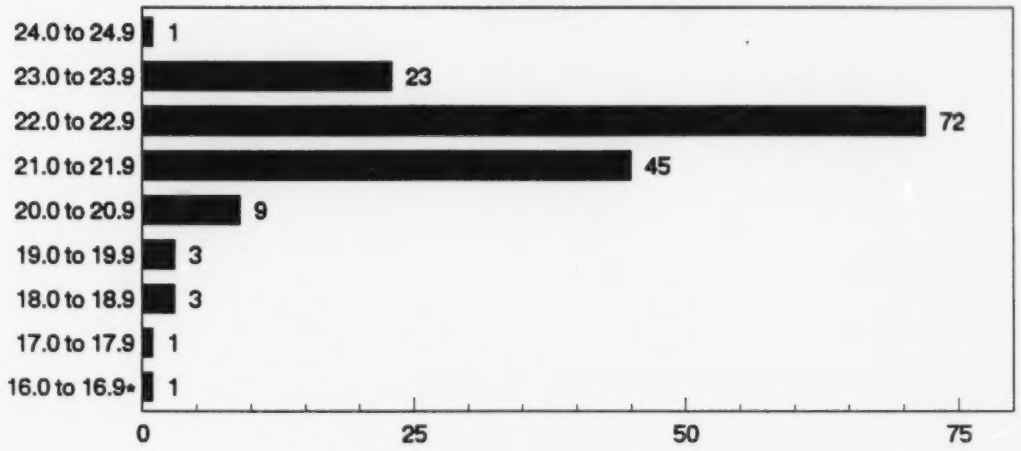
The report of the Governor's Commission on Quality and Integrated Education (1990) has pointed to growing racial isolation and the gap between the achievement of nonminority and minority children in Connecticut. This report has identified differences in achievement based on residence in a school district that extend over periods of time, over different subject matters tested, and that take extreme forms. More specifically, the data on student achievement on the Connecticut Mastery Tests presented in Sections II and III show substantial and sustained patterns of inferior performance for students resident in Hartford.

This same pattern of "systematically different achievement based upon the differences--such as residence...--that its members brought with them when they entered school" (Connecticut State Board of Education, 1984, p. 34) is particularly evident in Figures 83 through 94 (State of Connecticut, Department of Education, 1992a,b,c). Each figure presents the distributions of average district scores on the Connecticut Mastery Tests.

Figure 83 reports on the distribution of district average scores for the fourth grade mathematics test. Districts range in average performance from one district in the 24.0 to 24.9 range, to the largest number of districts (72) in the 22.0 to 22.9 range, to Hartford in the 16.0 to 16.9 range.

Figure 83 – Number of Connecticut Districts at Each Range of Mastery on the Fourth Grade Mathematics Test – 1991

* = Hartford Position

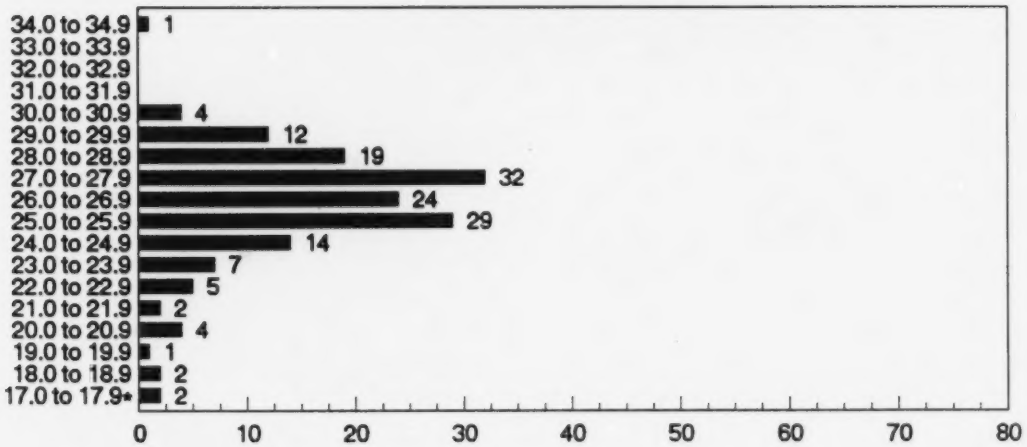


Source: State of Connecticut, Department of Education, 1992a.

Figure 84 presents data on the distribution of district average scores on the sixth grade mathematics test. Districts range from one district in the 34.0 to 34.9 range, to the largest number of districts in the 27.0 to 27.9 range, to Hartford and one other district in the 17.0 to 17.9 range.

Figure 84 – Number of Connecticut Districts at Each Range of Mastery on the Sixth Grade Mathematics Test – 1991

* = Hartford Position

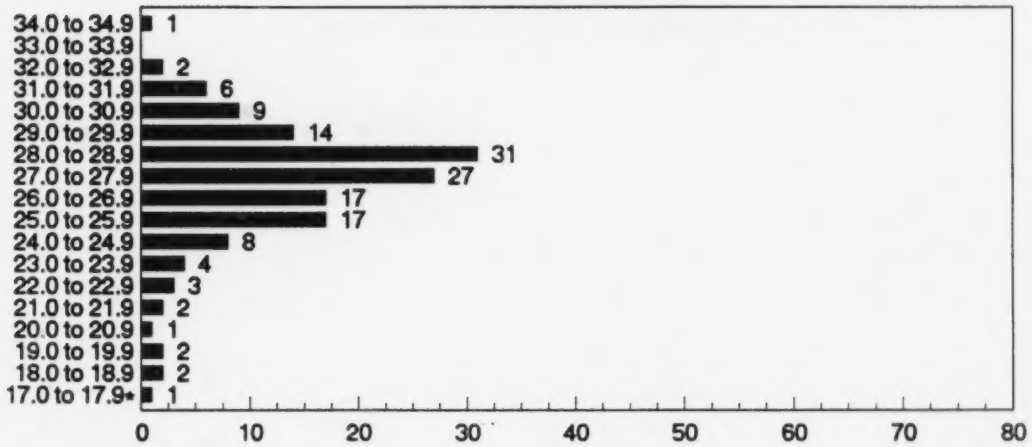


Source: State of Connecticut, Department of Education, 1992b.

Figure 85 depicts the data on the distribution of district average scores on the eighth grade mathematics test given during the 1991-1992 school year. The districts range from one district in the 34.0 to 34.9 range, to the largest number of districts in the 28.0 to 28.9 range, to Hartford in the lowest range, 17.0 to 17.9.

Figure 85 – Number of Connecticut Districts at Each Range of Mastery on the Eighth Grade Mathematics Test – 1991

* = Hartford Position

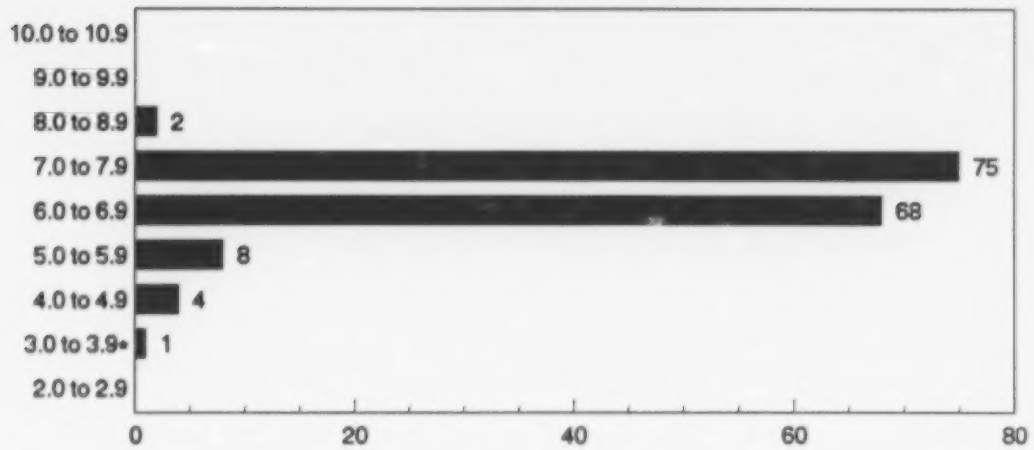


Source: State of Connecticut, Department of Education, 1992c.

Figures 86 through 88 present data from the language arts tests at the fourth, sixth, and eighth grades. Figure 86 shows the district averages for the fourth grade language arts test. The districts range from two districts in the 8.0 to 8.9 range, to the largest number of districts in the 7.0 to 7.9 range, to Hartford in the 3.0 to 3.9 range.

Figure 86 – Number of Connecticut Districts at Each Range of Mastery on the Fourth Grade Lang. Arts Test – 1991

* = Hartford Position

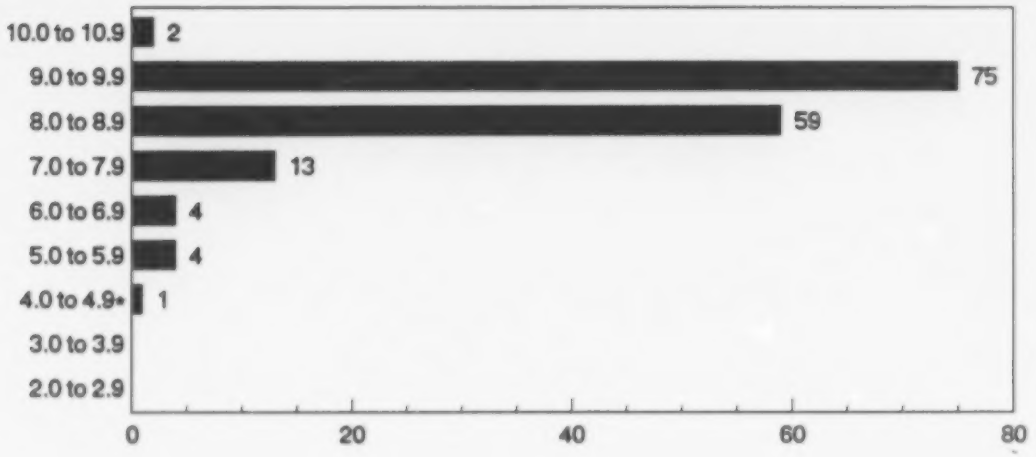


Source: State of Connecticut, Department of Education, 1992a.

Figure 87 contains the data for the sixth grade language arts test. The districts range from one district in the 10.0 to 10.9 range to the largest number of districts in the 9.0 to 9.9 range, to Hartford in the 4.0 to 4.9 range.

Figure 87 – Number of Connecticut Districts at Each Range of Mastery on the Sixth Grade Lang. Arts Test – 1991

* = Hartford Position

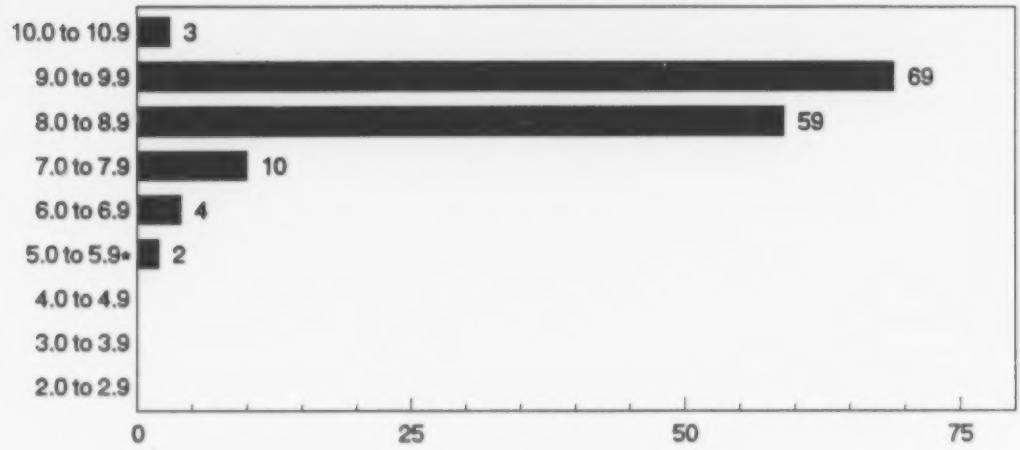


Source: State of Connecticut, Department of Education, 1992b.

Figure 88 presents the data for the eighth grade language arts test. Districts range from three districts in the 10.0 to 10.9 range, to the largest number of districts in the 9.0 to 9.9 range, to Hartford and one other district in the 5.0 to 5.9 range.

Figure 88 – Number of Connecticut Districts at Each Range of Mastery on the Eighth Grade Lang. Arts Test – 1991

* = Hartford Position

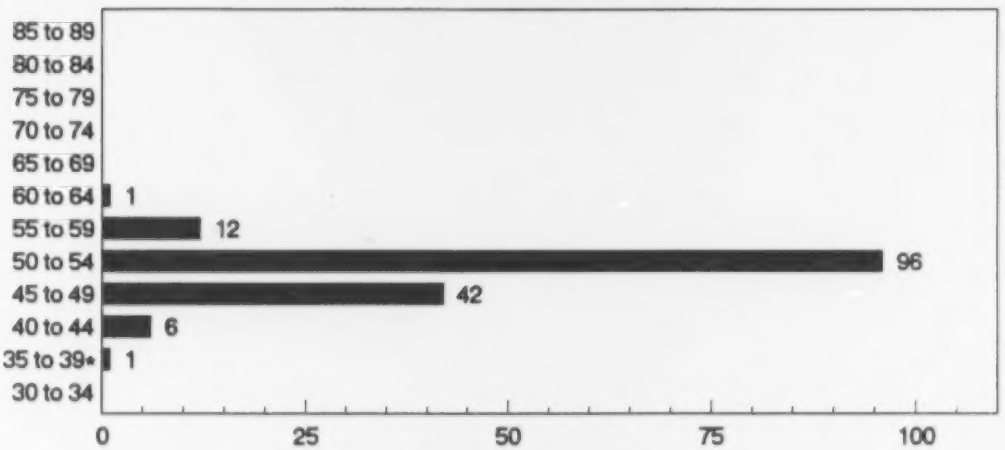


Source: State of Connecticut, Department of Education, 1992c.

Figures 89 through 91 present data from the fourth, sixth, and eighth grade DRP Tests, respectively. Figure 89 shows the data from the fourth grade test administered during the 1991-92 school year. Districts range from one district in the 60 to 64 range, to the largest number of districts in the 50 to 54 range, to Hartford in the 35 to 39 range.

Figure 89 – Number of Connecticut Districts at Each Range of the Fourth Grade DRP Test – 1991

* = Hartford Position

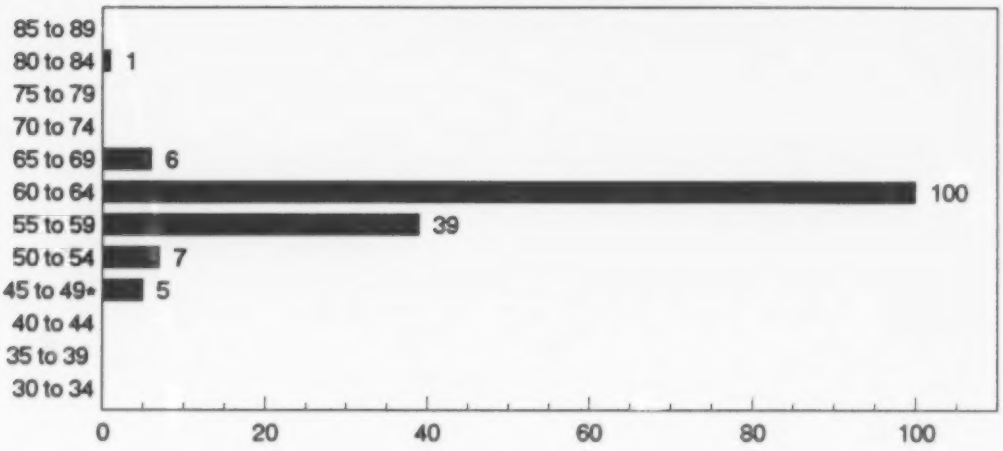


Source: State of Connecticut, Department of Education, 1992c.

Figure 90 presents the data from the sixth grade DRP tests administered during the 1991-92 school year. Districts range in performance from one district in the 80 to 84 range, to the largest number of districts in the 60 to 64 range, to Hartford and four other districts in the 45 to 49 range.

Figure 90 – Number of Connecticut Districts at Each Range of the Sixth Grade DRP Test – 1991

* = Hartford Position

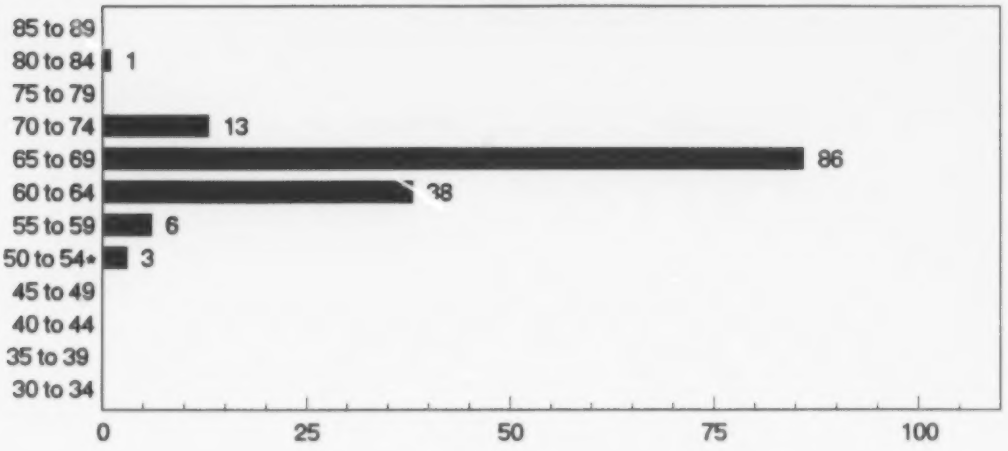


Source: State of Connecticut, Department of Education, 1992b.

Figure 91 presents data from the eighth grade DRP test during the 1991-92 school year. Districts range from one district in the 80 to 84 range, to the largest number of districts in the 65 to 69 range, to Hartford and two other districts in the 50 to 54 range.

Figure 91 – Number of Connecticut Districts at Each Range of the Eighth Grade DRP Test – 1991

* = Hartford Position

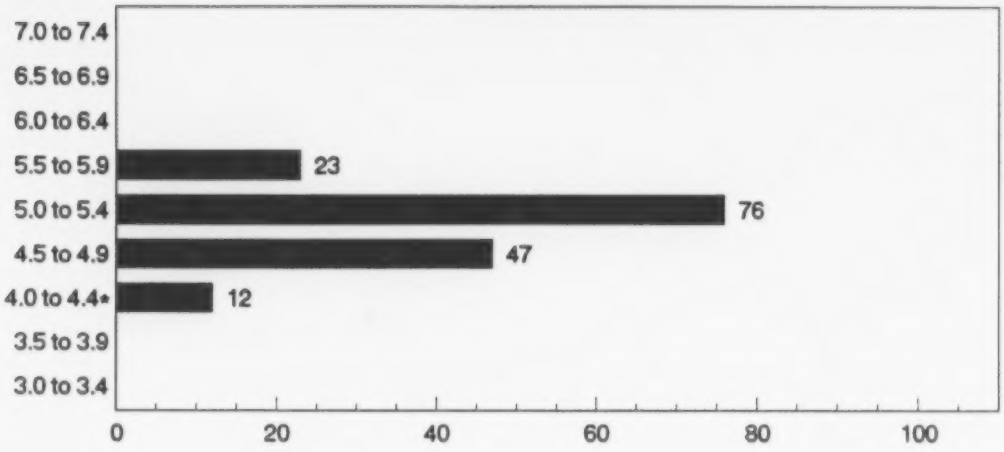


Source: State of Connecticut, Department of Education, 1992c.

Figures 92 through 94 present the results of the fourth, sixth, and eighth grade holistic writing tests. Figure 92 presents the results for the fourth grade test administered during the 1991-92 school year. Districts range from 23 districts in the 5.5 to 5.9 range, to the largest number of districts in the 5.0 to 5.4 range, to Hartford and eleven other districts in the 4.0 to 4.4 range.

Figure 92 – Number of Connecticut Districts at Each Range of the Fourth Grade Holistic Writing Test – 1991

* = Hartford Position

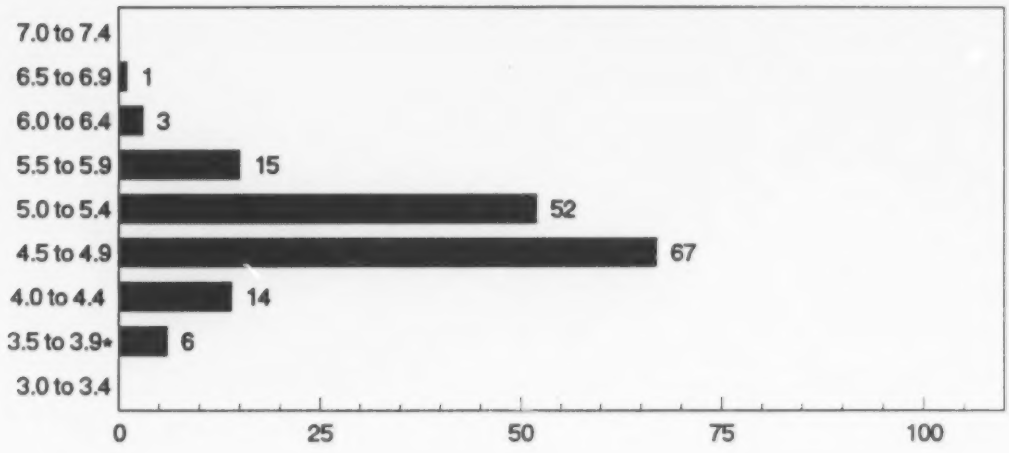


Source: State of Connecticut, Department of Education, 1992a.

Figure 93 presents the results of the sixth grade holistic writing test administered during the 1991-92 school year. Districts range from one district in the 6.5 to 6.9 range to the largest number of districts in the 4.5 to 4.9 range, to Hartford and five other districts in the 3.5 to 3.9 range.

Figure 93 – Number of Connecticut Districts at Each Range of the Sixth Grade Holistic Writing Test – 1991

* = Hartford Position

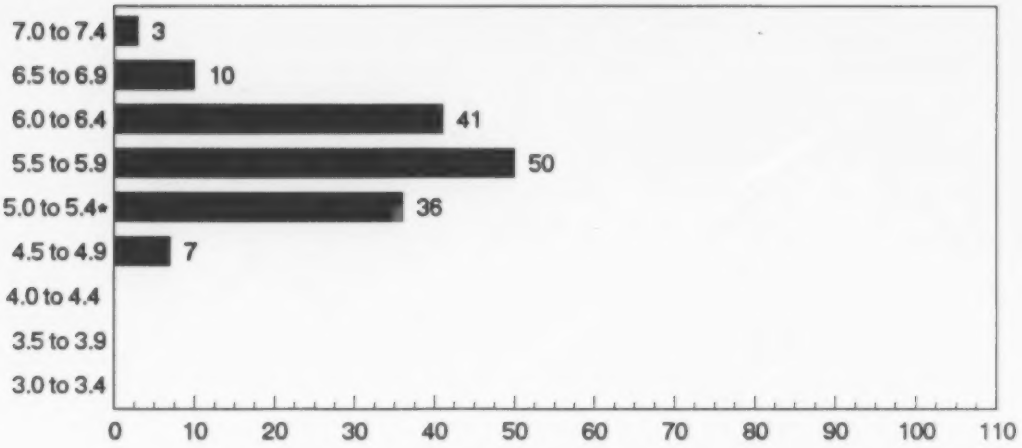


Source: State of Connecticut, Department of Education, 1992b.

Figure 94 depicts the results of the eighth grade holistic writing test administered during the 1991-92 school year. Districts range from three districts in the 7.0 to 7.4 range, to the largest number of districts in the 5.5 to 5.9 range, to seven districts in the 4.5 to 4.9 range. Hartford and 35 other districts fell in the 5.0 to 5.4 range.

Figure 94 – Number of Connecticut Districts at Each Range of the Eighth Grade Holistic Writing Test – 1991

* = Hartford Position



Source: State of Connecticut, Department of Education, 1992c.

Figures 83 through 94 demonstrate that the goal articulated in the Guidelines for Equal Educational Opportunity that students not systematically demonstrate different achievement based on residence has not be realized. Student performance varies by district or residence in all tests and at all grade levels. Hartford students in particular have average scores which put them at or near the bottom in all tests at all grade levels with the single exception of the eighth grade holistic writing test. As noted previously, Hartford students took this test in smaller proportions than students in many other districts (State of Connecticut, Department of Education, 1992c).

2. Policy Statement on Equal Educational Opportunity

In May of 1986 the Connecticut State Board of Education adopted a Policy Statement on Equal Educational Opportunity (Connecticut State Board of Education, 1986). This statement contains much of the material from the 1984 Guidelines, but adds some new information as well. In particular a new paragraph near the beginning

of the Policy Statement identified the evidence that the Board would rely upon to determine if students were being given equal educational opportunity in the schools of Connecticut:

> Evidence of equal educational opportunity is the participation of each student in programs appropriate to his or her needs and the achievement by each of the state's student sub-populations (as defined by such factors as wealth, race, sex or residence) of educational outcomes at least equal to that of the state's student population as a whole. (Connecticut State Board of Education, 1986, p. 1.)

Section II of this report provides abundant documentation of the performance of students in the Hartford Public Schools on the tests that make up the Connecticut Mastery Testing Program. As the data in Section II makes clear, Hartford students do not achieve educational outcomes equal to the state's student population as a whole. Moreover, Hartford students have consistently failed to achieve educational outcomes equal to those of the state's student population as a whole. Thus, using the definition set forth in the Connecticut State Board of Education's own policy statement, students in Hartford are being denied equal educational opportunity.

3. Governor's Commission on Quality and Integrated Education

In December of 1990 the Governor's Commission on Quality and Integrated Education (1990) issued a report on its vision of quality and integrated education for Connecticut. The Commission identified a number of troubling trends in education in Connecticut and made a series of recommendations to deal with them. In addition to this kind of work, the Commission added a new element to the assumptions accepted by state policy makers, an element that appears not to be been embodied in earlier public documents. Specifically, the Commission

> ...concluded that a quality education requires an integrated student body and faculty and a curriculum that reflects the heritage of many cultures... (Governor's Commission on Quality and Integrated Education, 1990, p. 13).

Using the definition of a quality education specified by the Governor's Commission, it is clear from the data presented in Sections I and III that students in the Hartford public schools are being denied a quality education in the first order because they are being denied an integrated student body.

B. State Standards for Student Performance

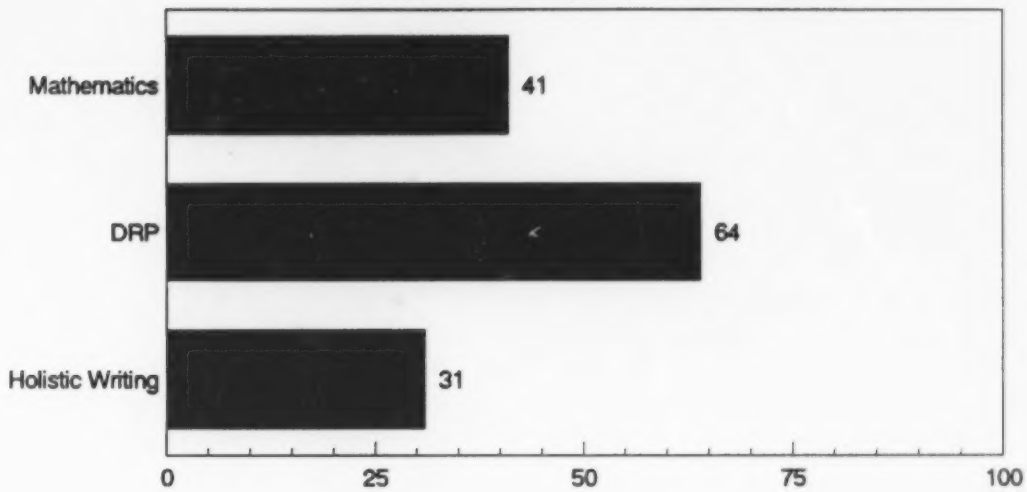
In addition to statements of policy such as those considered above, and the mastery standards associated with the Connecticut Mastery Tests and used in earlier presentations of such test data, there are two other formal expressions of standards for student performance widely understood in the state of Connecticut. These are the remedial standards and the state goals connected with the Connecticut Mastery Testing Program.

1. Remedial Standards

The remedial standards used in the Connecticut Mastery Testing Program pertain to the areas of mathematics, reading, and writing. These standards for the fourth grade, required in Section 10-14 m-4 of the Connecticut General Statutes, are described in report on the 1991-92 test (Connecticut State Department of Education, 1992a). According to these standards, students who answer fewer than 69 of the 100 items on the math test correctly, are below the remedial standard in math. Students who achieve a Degrees of Reading Power (DRP) unit score of lower than 41 are below the remedial standards in reading. Students who receive a total holistic score in writing of less than 4 are below the remedial standard (Connecticut State Department of Education, 1992a, p. 4).

Figure 95 presents the percentages of fourth grade students in the Hartford public schools not meeting the state remedial standards in mathematics, reading, and writing in the 1991-92 school year. As Figure 95 reveals, 41% of Hartford fourth grade students do not meet the remedial standards in mathematics, 64% do not meet the remedial standards in reading, and 31% do not meet the remedial standards in writing.

Figure 95 – Percentages of Hartford 4th Grade Students Not Meeting Remedial Standards – 1991–1992

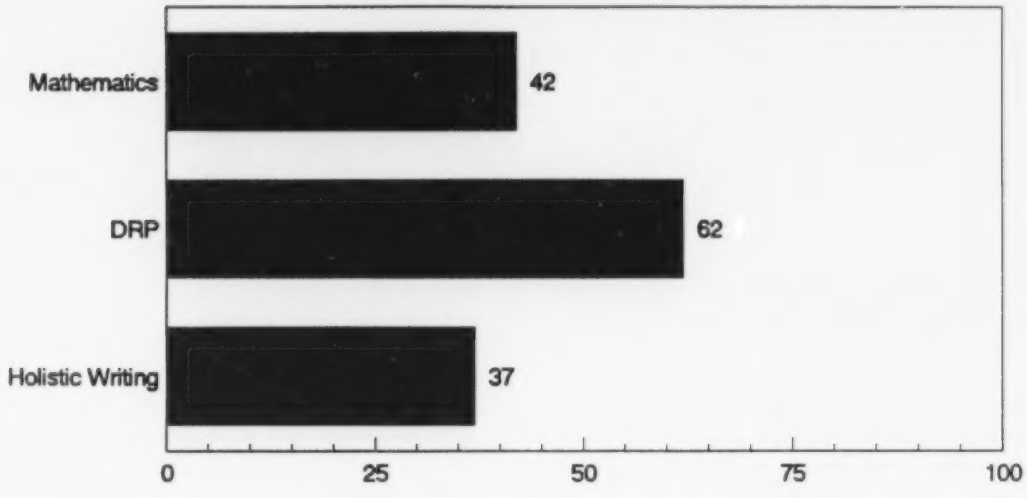


Source: State of Connecticut, Department of Education, 1992a.

On the sixth grade level, students who answer fewer than 79 of the 144 items (or 55%) of the items on the test correctly fall below the remedial standard in mathematics. Students whose Degrees of Reading Power (DRP) unit score is lower than 50 fall below the remedial standard in reading. Students receiving a total holistic writing score of less than 4 fall below the remedial standard in writing (Connecticut State Department of Education, 1992b).

Figure 96 portrays the percentages of Hartford sixth grade students not meeting the state remedial standards in mathematics, reading, and writing in 1991-92. As Figure 92 shows, 42% of Hartford sixth grade students do not meet the remedial standard in mathematics, 62% do not meet the remedial standard in reading, and 37% do not meet the remedial standard in writing.

Figure 96 – Percentages of Hartford 6th Grade Students Not Meeting Remedial Standards – 1991–92

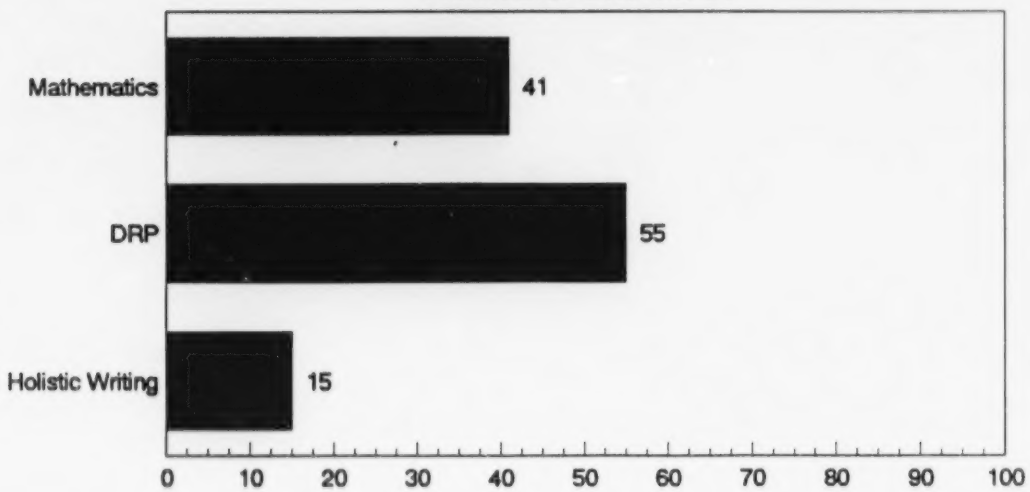


Source: State of Connecticut, Department of Education, 1992b.

At the eighth grade level, students who answer fewer than 78 of 144 items (54%) correctly on the math test are below the remedial standard in mathematics. Students with Degrees of Reading Power (DRP) unit scores below 55 are below the remedial standard in reading. Students receiving a total holistic score below 4 are below the remedial standard in writing.

Figure 97 shows the percentages of Hartford eighth grade students not meeting the state remedial standards in mathematics, reading, and writing. As Figure 97 indicates, 41% of Hartford eighth grade students are below the remedial standard in mathematics, 55% are below the remedial standard in reading, and 15% are below the remedial standard in writing.

Figure 97 – Percentages of Hartford 8th Grade Students Not Meeting Remedial Standards



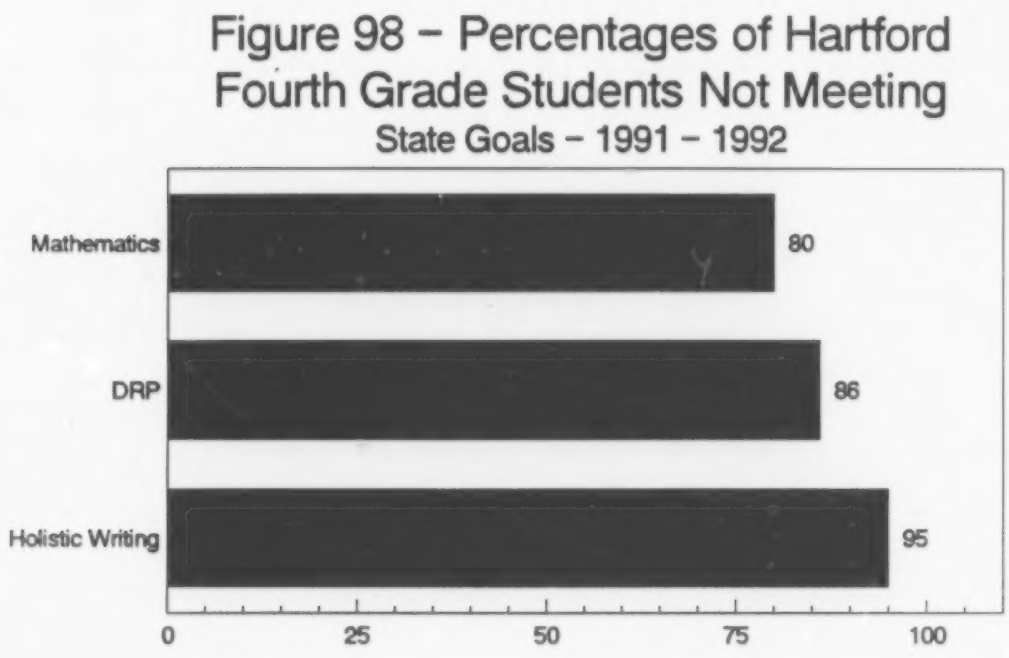
Source: State of Connecticut, Department of Education, 1992c.

2. State Goals

In addition to the state remedial standards in mathematics, reading, and writing, the state has also established state goals in these areas. The state goals "represent high expectations and high levels of achievement for Connecticut public school students. (Connecticut State Department of Education, 1992a, p. 4).

At the fourth grade level, students who fail to master 22 or the 25 objectives on the mathematics test do not meet the state goal. Students who fail to score a Degrees of Reading Power (DRP) unit score of 50 with 70% comprehension fall below the state goal in reading. Students who fail to receive a score of at least 7 on the holistic writing test fall below the state standard in writing (Connecticut State Department of Education, 1992a, p. 4).

Figure 98 depicts the percentages of Hartford fourth grade students not meeting the state goals in mathematics, reading, and writing in 1991-92. As Figure 98 shows, 80% of Hartford fourth graders fell below the state standard in mathematics, 86% fell below the state standard in reading, and 95% fell below the state standard in writing.



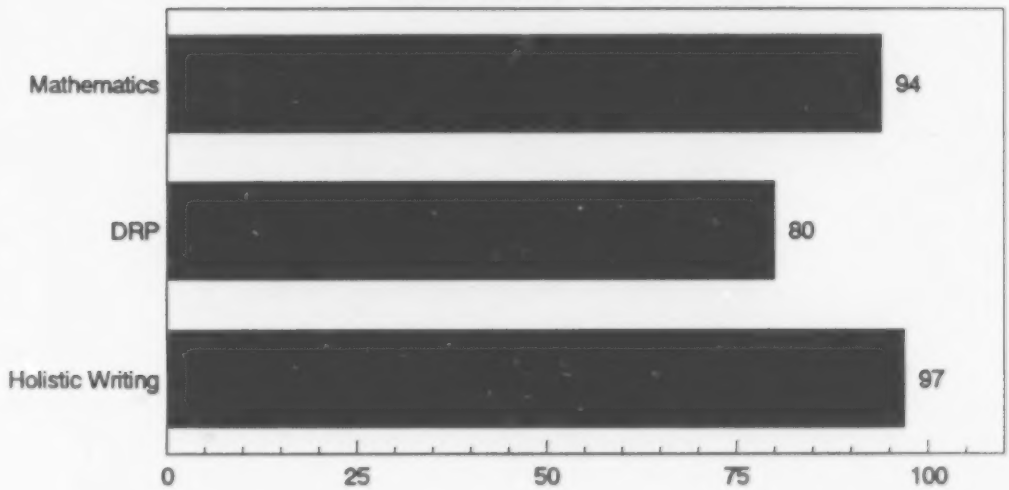
Source: State of Connecticut, Department of Education, 1992a.

At the sixth grade level, students who fail to master 31 of 36 objectives on the mathematics test fall below the state standard in mathematics. Students who fail to score at least a Degrees of Reading Power (DRP) unit score of 56 with 75% comprehension fall below the state standard in reading. Students who fail to score at least a 7 on the holistic writing test fall below the state standard in writing.

Figure 99 presents the percentages of Hartford sixth grade students not meeting the state goals in mathematics, reading, and writing in 1991-92. As Figure 99 shows, 94% of the sixth grade students in the Hartford Public Schools fall below the state

standard for mathematics, 80% fall below the state standard in reading, and 97% fall below the state standard in writing.

Figure 99 - Percentages of Hartford Sixth Grade Students Not Meeting State Goals - 1991-1992

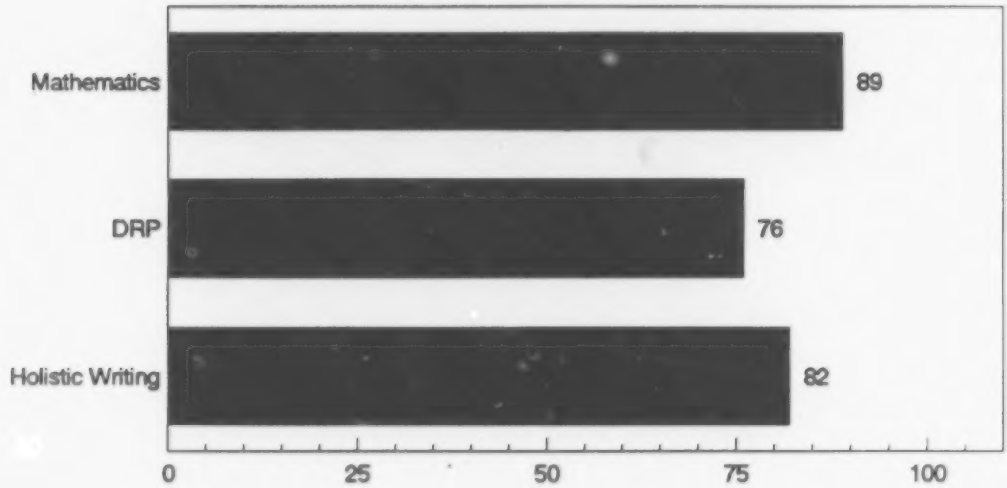


Source: State of Connecticut, Department of Education, 1992b.

At the eighth grade level, students who master fewer than 31 of 36 objectives on the mathematics test fall below the state standard in mathematics. Students who fail to score a Degrees of Reading Power (DRP) unit score of 56 with 75% comprehension fall below the state standard in reading. Students who score less than 7 on the holistic writing test fall below the state standard in writing.

Figure 100 presents the percentages of Hartford eighth grade students not meeting the state goals in mathematics, reading, and writing in 1991-92. As Figure 100 shows, 89% of Hartford eighth graders fall below the state standard in mathematics, 76% fall below the state standard in reading, and 82% fall below the state standard in writing.

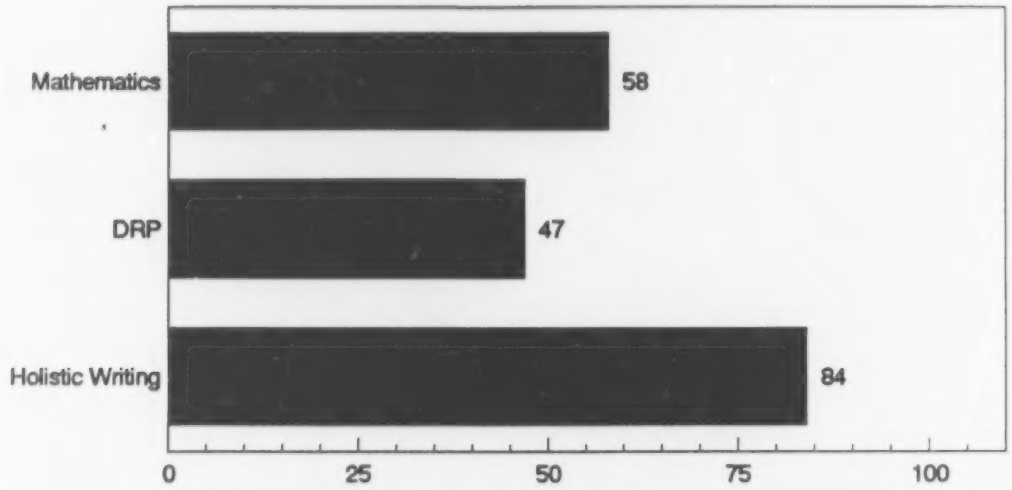
Figure 100 – Percentages of Hartford Eighth Grade Students Not Meeting State Goals – 1991–92



Source: State of Connecticut, Department of Education, 1992c.

It is important to recognize that the high percentages of Hartford students not meeting the state goals in mathematics, reading, and writing extend beyond subgroups of minority students or students in poverty. Figure 101 presents the percentages of non-minority group students in the Hartford Public Schools at grades 4, 6, and 8 not meeting the state goals in mathematics, reading, and writing as indicated on the 1991-92 Stategic School District Profile for Hartford (Connecticut State Department of Education, 1992k). As Figure 101 indicates, 58% of non-minority students in Hartford at the 4th, 6th, and 8th grades fell below the state goal for performance in mathematics, 47% fell below the state goal in reading, and 84% fell below the state goal in writing.

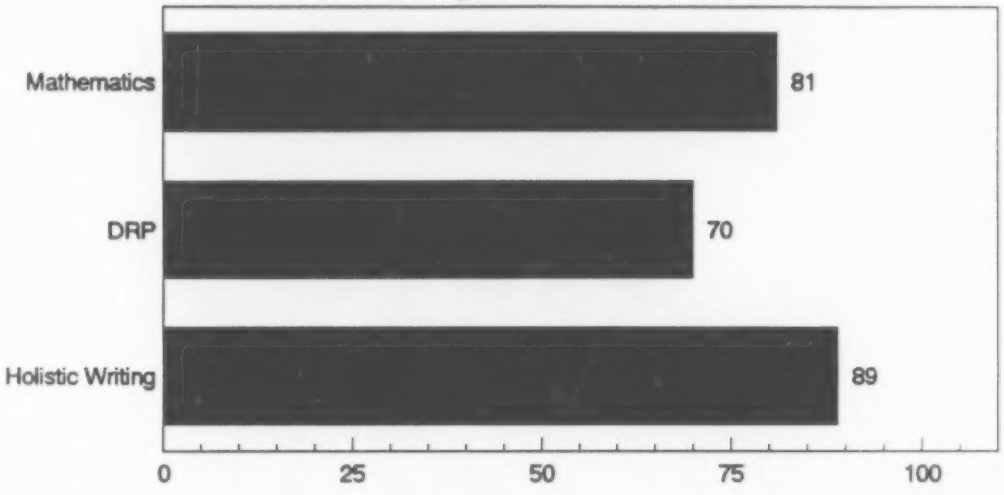
Figure 101 - Percentages of Hartford Non-Minority Students Not Meeting State Goals - 1991-1992



Source: Connecticut State Department of Education, 1992k.

Figure 102 portrays the percentages of non-free/reduced lunch students at the 4th, 6th, and 8th grades in the Hartford Public Schools not meeting the state goals in mathematics, reading, and writing. As Figure 102 indicates, 81% of the fourth, sixth, and eighth grade non-free/reduced lunch students in Hartford fell below the state goal in mathematics, 70% fell below the state goal in reading, and 89% fell below the state goal in writing.

Figure 102 - Percentages of Hartford Non Free/Reduced Lunch Students Not Not Meeting State Goals - 1991-1992



Source: Connecticut State Department of Education, 1992k.

Figures 101 and 102 show that large proportions of students from groups not typically associated with poor school performance, non-minority and non-poor students, are not well-served by the Hartford public schools.

C. The Connecticut Common Core of Learning

Any discussion of educational standards in Connecticut would be incomplete with at least some attention to Connecticut's Common Core of Learning (Connecticut State Board of Education, 1987). The Common Core of Learning represents the most current and comprehensive statement of "high expectations needed for all Connecticut students to become educated citizens" (Connecticut State Board of Education, 1987. p. 4). The Common Core covers: 1) student attributes and attitudes, including self-concept, motivation and persistence, responsibility and self-reliance, intellectual

curiosity, interpersonal relations, sense of community, and moral and ethical values; 2) skills and competencies, including reading, writing, speaking, listening, and viewing, quantitative skills, reasoning and problem solving, and learning skills; and 3) understandings and applications, including the arts, careers and vocations, cultures and languages, history and social sciences, literature, mathematics, physical development and health, and science and technology (Connecticut State Board of Education, 1987).

The Common Core of Learning is a statement of ambitious goals for Connecticut Education. Equally ambitious is the assessment program being developed to accompany the Common Core by the Connecticut State Department of Education (Baron, Forgione, Rindone, Kruglanski, and Davey, 1989). The assessment program will provide coverage of a broader range of areas and employ a wider variety of assessment strategies than earlier efforts. Although these new assessments are under development and results are not presently available for all high schools in Connecticut, they offer the prospect of the most comprehensive examination of the performance of students in Connecticut public schools. Future examinations of education in the Hartford public schools may be able to rely on such assessments to develop an even greater understanding of student performance. In the mean time the Common Core highlights the limitations of the current assessment program and of the schools and districts that are unable to prepare students to perform successfully in terms of even a narrower range of performance dimensions.

Conclusions

This report has considered four major questions and arrived at four major conclusions. Section I reviewed the resources for schooling available in the Hartford community and among the Hartford population. After considering a number of sources of data on the basic background characteristics of community members, parents, and families, it is quite clear that the basic background resources that support effective schooling are less available in Hartford than in Connecticut communities in general.

Section II considered the resources for education available to the Hartford public schools. After examining both indicators of financial resources and indicators of program resources, it is clear that, analyses of aggregate resources of the Hartford public schools which show levels comparable to some surrounding districts are the result of higher costs for some components of the total educational program (e.g., staff costs), typically connected to operating in a major urban environment, and serious and sustained deficiencies in resource categories closely connected with the educational program (e.g., materials and equipment). Moreover, there is no indication of aggregate resource levels that would enable the Hartford public schools to respond to the serious needs of Hartford students evidenced in the analyses in Section I. It is not surprising that this combination of needs and resources would lead to the patterns of lower performance on multiple indicators presented in the last half of Section II. Across a range of indicators, grade levels, and years, Hartford students perform less well than Connecticut students overall.

Section III offered comparisons between the resources and elements of the educational programs of the Hartford public schools and those in adjacent and contiguous communities. These comparisons provided additional evidence for the disparities in key educational resources among Hartford and the surrounding

communities. These disparities were also evident among the various indicators of the outcomes of the schooling process.

Section IV presented different sources of standards for education in Connecticut as a context for examining the adequacy of education in Hartford. Using a variety of such standards, the analysis made it clear that the Hartford public schools do not meet these publicly articulated educational standards of the State of Connecticut.

Footnotes

[1]The average fifth grade class size in Hartford schools is 23.4 students.

[2]The use of the Census report of 19.8% of the households in which a language other than English is spoken and in which the respondent did not speak English "very well" is a considerably more conservative estimate of the size of the LEP population than the Connecticut State Department of Education Strategic School District Profile 1991-91 report that 51.3% of the students served by the Hartford Public Schools came from homes in which a language other than English was spoken.

[3]As used here, the crime statistics assume that the population perpetuating crimes is the same as the population being victimized by crimes. The alternative extreme to this assumption would be to assume that there is no overlap in the populations of perpetrators and victims, in which case the rate of individual experience with a crime would be over 30% in a single year, and the rate of household experience with crime in a single year would be over 82%. Of course, all of these estimates are based on reported crimes, which undoubtedly represent only some portion of actual crimes. On the other hand, these estimates do not taken into account that some portion of the crimes committed in the City of Hartford are committed against individuals who do not live in the city.

[4]Prior to the 1992 report on Connecticut Public School Expenditures (State of Connecticut Department of Education, 1992d), which reported on expenditures for the 1990-91 school year, this category appeared as two categories: Textbooks, and Instructional Supplies. For the school years prior to 1990-91, the figures from these two separate categories have been combined in calculating the three-year average figures reported here.

[5]Beginning with the fall 1990 administration of the sixth grade test two original objectives, "adding fractions with like denominators, requiring grouping," and "adding and subtracting fractions with unlike denominators" were replaced with two new objectives, "conversion between mixed numbers and improper fractions" and "estimation of sums of differences of fractions and mixed numbers." This change was requested by the Mathematics Advisory Committee "in response to concerns about the developmental appropriateness of requiring mastery of abstract fractional computation early in grade six (State of Connecticut, Department of Education, 1991b:2). The average scores of both Hartford students and Connecticut students overall increased more from 1989 to 1990 than during any one-year period from 1987 to 1990. Average scores for Connecticut students increased .5 objectives and average scores for Hartford students increased 1.0 objectives from 1989 to 1990.

[6]These figures include both exempt students and eligible students who were not tested. The decision to include exempt students was made to provide some overall figure for students not tested; it does not represent a challenge to the the procedures for exempting students from testing.

[7]There are at least three distinctly different types of dropout rates reported in the literature. Event rates provide a measure of the proportion of students who drop out in a single year without completing a certain level of schooling (e.g., typically secondary school in developed countries). Status rates provide a measure of the proportion of the entire population of a given age who have not completed a certain level of schooling and are not currently enrolled. Because status rates include all those who have dropped

out at any time they are much higher than event dropout rates for any one year. Finally, cohort rates provide a measure of dropping out among a single group or cohort of students over a given period of time (National Education Goals Panel, 1991, p. 219; Natriello, forthcoming).

[8]These rates are calculated by taking the percentage of students who dropout in each grade level (9-12) in a given school year and calculating the mean annual rate, adjusting for the sequencing of the dropping out.

[9]The figure for students continuing their education calculated by the Connecticut State Department of Education includes students attending "two- and four-year programs at colleges and universities or professional schools, vocational schools or postgraduate study" (State of Connecticut, Department of Education, 1989, p. 6), while the national figure includes only those students enrolling in college.

[10]An October 19, 1992 analysis of these expenditure categories conducted by the Connecticut State Department of Education, Bureau of Grants Services used audited expenditure data instead of the preliminary, unaudited expenditure data available in the Connecticut State Department of Education publications used for this table. Although that analysis revealed some differences in the figures reported, the central fundamental relationships remain the same. As a result, no changes have been made in the original estimates presented here in order to maintain an approach to the expenditure data consistent with analyses of published data for Hartford and districts statewide presented earlier.

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